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CHRISTIAN SOCIAL THOUGHT IN FUTURE PERSPECTIVE

No. 6 February 1971

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These papers are circulated for the information of participants in the ecumenical enquiry on "The Future of Man and Society in a World of Science-Based Technology". Comments are welcome.

Department on Church and Society, World Council of Churches, 150 route de Ferney, 1211 Geneva 20, Switzerland

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EDITORIAL NOTE

All discussions of the future of man and society must, unavoidably, include the question of population growth and planning. The Exploratory Conference on Technology and the Future of Man and Society held under the auspices of the World Council of Churches (June 1970) gave one of its sessions to this question and received the four papers included here, as presented with slight editorial abbreviations in the interest of space.

Earlier discussions of this question have been dominated by western experts who are often eloquent on the subject of the population explosion in Africa, Asia and Latin America. Therefore we sought to include students of the problem from these continents, and three of the four papers are written from this perspective.

The writers are, in the order of their papers:

Prof. Theodore K. Ruprecht is teaching economics at Humboldt State University in California and is a recognised authority on world demographic problems, having represented the United States at several international population conferences.

Dr. Rodrigo Gutiérrez is Dean of the medical faculty of the University of Costa Rica and has also participated in international discussions of the population question.

Mr. Samuel Kwesi Gaisie, sociologist, specialising in African demographic questions is attached to the Demographic Unit of the Sociological Department of the University of Ghana.

Dr. Savitri Thapar of India is presently lecturer on population policies at the London School of Economics and Political Science.

P.A.

I

PROSPECTS FOR RAPID POPULATION GROWTH AND THE ECONOMIC AND SOCIAL ARGUMENTS FOR POPULATION CONTROL

by Prof. T. K. Ruprecht
(U.S.A.)

The world's population is currently growing rapidly. The annual rate of growth is now approximately 1.8 per cent per year, a rate which doubles the population in 38 years. This may be placed in perspective by a brief examination of the history of population increase.

World population grew very slowly in the interval A.D. 1 to 1750 as seen by the fact that it required more than a thousand years to double. The rate slowly accelerated so by 1750 it was growing at approximately 0.5 per cent per year, or doubling every 150 years. During the eighteenth and early nineteenth centuries, an approximately simultaneous up-turn in the rate occurred in most regions of the world with the exception of China, where the rate of increase declined for almost the entire nineteenth century. Since the Chinese population was large, the world rate of population growth during this period was held down and the more general acceleration masked.

The upturn in the rate of increase can be best seen in Europe, where it rose to 0.9 per cent in the decade 1820-1830. After a period during which the rate fell below this level, it rose again to 1.0 per cent for the years 1880-1910. The maximum decade rate for Europe was 1.1 per cent in 1900-1910.

The current world situation is the net result of considerably disparate rates. The economically developed and under-developed countries constitute two rather distinct demographic groups from the standpoint of population growth rates, with rapid growth characterising the latter and slow growth the former. As a group, the underdeveloped countries are currently growing at a rate approximating 2.2 per cent per year. Within this average, however, there are rather substantial variances in rates. For example, the estimated annual percentage growth rate for Mozambique is 1.2, Burma 2.2, Nigeria 2.5, Brazil 3.1, El Salvador 3.3 and the Philippines 3.5. In addition, rather considerable differences are observed in the factors determining these rates, Fertility and mortality rates are the chief determinants of the rate of growth of population except in those rather special cases in which international migration constitutes an important third variable. The underdeveloped countries evidence substantial differences in the level and trend of these vital rates. The range is from conditions of high fertility and high mortality such as in Dahomey (with a birth rate of 54 births per year per 1,000 population and a death rate estimated between 26 and 31 deaths per year per 1,000 population), through conditions of high fertility and falling mortality such as in the Dominican Republic (49 and 15), and high fertility and low mortality such as in Paraguay (45 and 11), to falling fertility and low mortality such as in Taiwan (29 and 6) and Singapore (27 and 5).

If we allocate the underdeveloped countries into these four classifications, the resulting population distribution is as appears in Table I.

TABLE I

Demographic Classification of Underdeveloped Countries
Total and Percentage Population

	Classification (1)		Location					
	Fertility per 000 pop.	Mortality per 000 pop.	AFRICA in millions	%	ASIA (2) in millions	%	LATIN AMERICA in millions	%
1.	40 and +	30 and +	33.3	12.5	27.0	2.6	0.0	0.0
2.	40 and +	15-30	218.8	82.2	869.0	84.1	23.3	12.7
3.	40 and +	Less than 15	13.3	5.0	73.6	7.1	111.0	60.6
4.	Falling	Less than 15	0.8	0.3	63.4	6.1	48.7	26.7

(1) Southern Yemen, Malaysia, North Korea, Brazil and Gabon fall outside this classification system

(2) Excluding Mainland China

Note: Incomplete birth and death data for 11 African countries having a population totalling 65 million and 9 Asian countries with a population totalling 86.3 million had to be excluded from the classification.

Source: 1969 World Population Data Sheet, Population Reference Bureau.

The bulk of the African and Asian population lies in category 2 - high fertility and falling mortality - while three-fifths of the population of Latin America falls in category 3 - high fertility and low mortality.

The different vital rates produce somewhat different demographic conditions. One such condition of considerable importance is age structure and via age structure, dependency. High fertility and low mortality both produce a young age structure. Of the two, fertility is much the most important. Thus, the existence of various mortality and fertility conditions produces different age structures and dependency burdens. Highest dependency burdens occur when fertility remains high and mortality is reduced. In these cases, the proportion of the population 15 years of age and under reaches levels as high as 50 per cent.

The rate of population growth in the economically developed countries is currently less than one per cent per year. Some variability is also distinguishal

here with growth rates ranging from 0.4 per cent in Hungary, 0.6 per cent in West Germany and France, 0.8 per cent in the United States, 1.0 per cent in the Soviet Union, Yugoslavia and Canada, to 1.2 per cent in Japan and 1.3 per cent in New Zealand.

The picture which emerges is one of uneven national and regional growth, a phenomenon which will be accentuated in the future. The relative growth potential can be envisaged with the help of Table I. The proportion of the population living under conditions of high fertility and high and falling mortality may be used as an indication of potential increases in growth rates. The high proportion in Africa and Asia indicate greater potentiates for further rapid increases. This is probably more true of Africa than Asia because a large part of the Asian Group in category two consists of populations living in countries having active national family programmes designed to accelerate the demographic transition. Since Latin America has, to a considerable extent already achieved substantial reductions in mortality, most of its potential for further increases in the rate of growth of population has been used up. Finally, in Europe and North America where the demographic transition is advanced fluctuations in the rates of growth can be expected to occur around a falling trend as reactions to economic and social conditions.

These expected regional differentials are evident in the population projections of the United Nations.[1] In the "medium" projections, the rates of growth by regions between 1970 and 2000 are shown in Table II.

TABLE II

Region	Annual Rate of Population Growth	
	1970-1985	1985-2000
Asia	2.0	1.7
Europe (incl. U.S.S.R.)	0.8	0.7
Africa	2.7	2.7
N. America	1.5	1.5
Latin America	2.9	2.6

The foregoing review indicates that the current and prospective rate of growth of population in the economically underdeveloped countries is very high by either current or historical standards. They are two to three times the average of current rates in the developed countries and two to three times the maximum historical rates which existed during the European demographic transition.

The arguments for a reduced rate of population increase rest upon the demonstration that population growth acts as a constraint upon the achievement of maximum social welfare. One area* of crucial interest is the constraint that population increase places upon social welfare via its impact upon the pace of

*This section is condensed from Population Programmes and Economic and Social Development, Development Centre Studies, Organisation for Economic Co-operation and Development, 1970

economic development in underdeveloped countries. Theoretical and empirical analysis of the effects of rapid population growth upon the performance of the total economy show that a reduction in fertility can make significant contributions to the development process. These contributions become increasingly important after 15 to 20 years.

A number of economic growth models have been designed to explore the effects of different demographic conditions - especially different trends of fertility - upon economic development and per capita income.

Table III presents the results of these models in terms of the percentage advantage in per capita income of reducing fertility compared with constant fertility. The table shows that the results derived from the various models are quite consistent. The advantage of fertility reduction amounts to a per capita income advantage of approximately 3-5 per cent after 10 years, 15-25 per cent after 20 years, and 25-50 per cent after 30 years, thus demonstrating that it is an important development variable. The table also demonstrates the point that the economic impact is more a long-run than a short-run phenomenon.

TABLE III

Population - Economic Growth Model Comparison

Per capita income under declining fertility in comparison to that under constant high fertility, various time periods

Model	Country	Percentage ratio of per capita income of declining fertility case to high fertility case after:		
		10 years (1)	20 years (1)	30 years (1)
Coale and Hoover	India	103	113-116	138-148
Hoover and Perlman	Pakistan		114-120	
Ruprecht	Philippines	104-105	117-132	135-193
Newman and Allen	Nicaragua	105	115	125

(1) Range in ratios produced by alternative parameter values, e-g. saving propensities, levels of autonomous growth element, etc.

Sources: Ansley J. Coale and Edgar M. Hoover. Population Growth and Economic Development in Low-Income Countries, Princeton University Press, Princeton 1958

Edgar M. Hoover and Mark Perlman, "Measuring the Effects of Population Control on Economic Development: Pakistan as a Case Study", Pakistan Development

Reviews, Vol. 6, No. 4, Winter 1966, pp. 545-566

Theodore K. Ruprecht, Population and Economic Development in the Philippines, unpublished

Peter Newman and R. H. Allen, Population Growth and Economic Development in Nicaragua, Robert R. Nathan Associates, Inc., Washington, D.C., 1967

The range in advantage represented in the table for the longer time period results from the different growth parameters assumed in the various versions of the simulation models. An analysis of these various versions demonstrates that while high fertility and rapid population growth act as inhibiting factors in economic growth, they need not constitute absolute barriers to economic development. This conclusion is based upon the fact that many of the model versions show continuous growth of per capita income over a 30-40 year similation period under conditions of constant fertility, declining mortality and growth parameters for such variables as savings, employment and technological change which are within the experience of developing countries. These models also show, however, that the advantage of reduced fertility remains quite constant over a wide range of growth parameters. This can be interpreted as implying that "successful" economic growth does not seriously weaken the argument for fertility control since it does not seriously reduce the economic advantage involved.

The extent to which the growth parameters need to be more favourable in order to compensate for the failure to reduce fertility are, however, fairly substantial, more substantial in the more sophisticated models than in the more simple ones. The conclusion is that it is possible to offset the cost (in terms of foregone potential per capita income) of rapid population growth by achieving more favourable economic growth parameters, but only at the price of intensifying the already difficult development task. This is true since rapid population expansion does not aid in achieving the more favourable parameter values, except perhaps the rate of development and acceptance of improved agricultural technology, but in fact, hinders their achievement by, for example, increasing the pressure of consumption upon household incomes and thus savings. Thus, the failure to reduce fertility either results in a loss of per capita income in the opportunity sense given above or, if this is compensated, it results in an increase in the required development effort.

In the longer run perspective there is the concern that population growth, in combination with increases in per capita income, will increase natural resource scarcity to such an extent that this scarcity will become an important drag upon rising economic welfare and may even threaten the maintenance of achieved levels of welfare.

Of the factors determining the long run demand for natural resources such as relative prices of imputs and products, tastes, changes in technology,

population growth and increases in per capita income, the latter two are the most important. The annual rate of increase in the demand for natural resources, R*, can be approximated by the equation $R^* = P^* + E_r (\frac{Y}{P})^*$ where P* is the rate of growth of population, E_r is the income elasticity of demand for natural resources and $(\frac{Y}{P})^*$ is the growth rate of per capita income. P* for the world is approaching a 2 per cent and $(\frac{Y}{P})^*$ is unlikely to go beyond 3 per cent for any sustained period. Since the income elasticity of demand is less than one for nearly all agricultural products and for most mineral products, it follows that population growth will probably play the leading role in determining the long-run demand for natural resources.[2]

For underdeveloped countries, E_r is higher than in developed countries. This results from the fact that the income elasticity for food is higher at low levels of income, it being about 0.9 in underdeveloped countries as against 0.2 in high income countries such as the United States. (An elasticity of 0.9 means that a 1 per cent increase in income results in a 0.9 per cent increase in the demand for food.) A second and third factor contributing to a high E_r in underdeveloped countries is that food constitutes a larger per cent of total expenditures and land constitutes a larger per cent of total natural resources, as seen from the fact that the market value of the products of land in underdeveloped countries often exceeds 90 per cent of the total value of all natural resource products. This means that increases in per capita incomes in underdeveloped countries place an especially large strain upon their natural resource base.

The role of a fall in the rate of population expansion can be seen by substituting $Y^* - P^*$ for $(\frac{Y}{P})^*$. A one percentage point decline in P* directly reduces R* by one percentage point. The decline in P* increases $(\frac{Y}{P})^*$ by more than one percentage point, however, since it increases the rate of growth of output. In underdeveloped countries with high income elasticities, the increase in the $(\frac{Y}{P})^*$ term is compensatory to the decrease in the P* term. Thus, population control does not appear to play an important role in mitigating the strain on natural resources in underdeveloped countries. In developed countries where the reduction in P* is unlikely to have an important output impact and the elasticities are low, the demand for natural resources is more responsive to changes in the rate of growth of population.

When considering the role of natural resource scarcity as a potential constraint on improvements in man's economic conditions, it is essential to recall that output is a function of man-made and human resources as well as natural resources. Thus, it does not follow that natural resource scarcity or a reduction in the natural resource base constitutes a reduction in the <u>total</u> resource base. This position recognises the possibility of substitution among resources and among products. As particular resource scarcities develop, changes in relative prices bring about substitution in production. As resource prices change, relative product prices change and the substitution process takes place at the product level. The substitution of aluminium and plastic

pipe for copper pipe represents an example of the process. Furthermore, as incomes rise, the composition of output changes under the influence of different income elasticities of demand. This change is reflected in the rising per cent of output which takes the form of services. The relatively modest resource imput embodied in services contributes to a modification of the demand for natural resources. Finally, the role of technology is such as to make uncertain the trend toward greater resource scarcity by reducing the natural resource content of output, by expanding the natural resource base and by altering the price elasticity of demand through the development of substitutes.

The relationship between population growth and land scarcity is often singled out as a particularly significant natural resource concern because of its close connection with the question of food and famine. Predictions of impending famine due to land scarcity have been a stock argument of the population crisis adherents. Their predictions have not been realised because their assumption of a relatively inflexible extensive land margin and/or a relatively fixed agricultural technology have not been fulfilled. The application of man's existing knowledge to the problems of land supply augmentation and increases in crop yields through multiple cropping, irrigation, improved seeds, more productive crop mixes, effective pest and disease control and improved soil fertility, would appear to be sufficient to assure adequate food supplies for a considerable period of time. The ability, however, of the social and cultural factors to accommodate the changes required for the application of this knowledge remains a main current question mark. This problem is a population problem only to the extent that rapid rates of population increase or greater population densities make the transition to new behaviour patterns more difficult. If they in fact do so in the area of agricultural technology is currently a debatable question.[3]

The length of time present reserves of depletable resource will last is uncertain because the size of world reserves is imperfectly known and the role of technology in improving the efficiency of use and the degree of recycling is difficult to predict. It is this uncertainty, coupled with the impossibility of determining objectively either an optimum or maximum population size, which calls for caution in the rate at which we move away from our present population situation. This is especially true since population growth has a considerable inherent momentum and the full effects of changes in vital rates take very long periods to work themselves fully out. In any event, the success in coping with natural resource scarcity, as well as the broader questions imposed by population growth, depends upon the development and effective use of the necessary skills, technology, and capital. To the extent that population growth reduces the ability to develop and use these ingredients, for example, by inhibiting the upgrading of the quality of education and the improvement in enrolment ratios[4] and/or by increasing the pressure of consumption on income, it accentuates the resource problems associated with population and income growth.

Another argument for population control which is increasingly heard, especially in the developed countries, stems from the environmental pollution problem. This stems from the recognition that with given technology, the capacity of the environment to sustain economic processes is finite. There is no doubt that man's behaviour has had serious unbalancing effects upon the environment. The mass media is constantly providing new examples of man's careless behaviour or of his predelection to introduce new behaviour in the form of technological "advance" without an understanding of, or appreciation for, the ecological consequences. One reason, of course, is man's tendency to think of the world in man-centered terms rather than the system-centered terms of the ecologist. The usual diagnosis is that positive rates of population and economic growth will increase the pollution problem. The conclusion which flows from this is that a zero rate of population and economic growth is, therefore, the solution.

In reality, however, the nature of the pollution problem is to a large extent rooted elsewhere, namely in the phenomenon of externalities, in this case predominantly external diseconomies. External diseconomies are costs which are not borne internally by the producer but externally by society. To give an example, the polluter of a stream does not bear the cost which the pollution imposes on those who wish to fish the stream, swim in it, picnic along it, or drink its water. Since the compensating costs, monetary or psychic, which are thus incurred by society are not borne by the producer, they are not reflected in the cost and price of the output. The result is that the price mechanism does not perform its full economising function. That is to say, that since population is not fully costed, the process of economising increasingly costly elements in production is not activated. What is desired is to convert th external diseconomies into internal costs through, for example, a system of proportionate effluency fees. The result would be to cause the producer to economise on his pollution and, most importantly, to develop production technology which is more pollution and, therefore, cost free. The importance of this latter point is that it brings technological development to bear on the problem and extends the limits of the environmental margin to economic processes. The environmental pollution margin is much more sensitive to manipulation in this manner than through a slow-down in economic and population growth with given behavioural patterns. The conception of the pollution problem in terms of external diseconomies leads to solutions which emphasise maximum welfare at lowest consumption and maximised recycling and lead to the real goal of zero environmental deterioration. Rather than implying a zero rate of population and economic growth, the end result is seen to be a rate of economic and population growth constrained to the rate of improved recycling technology.

Two aspects of environmental concern are not fully covered by the preceeding discussion. These are environmental space and diversity. The reductions in both are probably rather direct functions of population growth. Their sensitivity to technological developments is unknown. Both appear to be necessary for the healthy survival of man.[5] Both constitute legitimate reasons for a reduction in the rate of population growth.

Changes in population size and density force changes in patterns of social behaviour and bring about changes in the institutional arrangements set up by society to structure behaviour. It seems clear than an important force motivating the desire for population control is the conservatism which wishes

to see the perpetuation of current institutions and ways of life or which views with foreboding the nature of the new institutions that will be forthcoming as the limits of the current ones are exceeded. These are questions about which we clearly need greater understanding of the alternatives so that we may choose wisely or deliberately develop more favourable institutional arrangements. The understanding would also let us see the extent to which our current pessimism is the result of our limited imagination.

Thus far we have laid the basis for the view that if a decline in fertility does take place its occurrence should be welcomed. This is not equivalent, however, to the proposition that an active policy aimed at inducing a fertility decline should be undertaken. The preceeding discussion of the gains from reduced population growth has been carried our predominately in macro or aggregate terms which demonstrates that such a reduction yields social benefits, but the demonstration that society benefits may not be persuasive as far as individual families are concerned. This is important since change in fertility must, by the nature of the matter, occur at the micro or family level. The possibility of a divergence between social and individual benefits raises a number of very interesting questions.

In reality, however, the fertility decisions of families do affect others; i.e. there are externalities and, thus, the welfare maximising behaviour of each family cannot be assumed to produce a social optimum. A prima facie case, therefore, exists for governmental intervention to achieve the optimum. The situation may well exist in which "families do prefer "low" fertility to "high" fertility provided every other family chooses low fertility. But suppose now that once assured that all other families will elect to have low fertility, each family prefers high fertility itself. A simple-minded example may give some plausibility to such behavioural assumptions. Suppose that children are desired because they provide both (a) parental satisfaction and (b) old age security, and that the traditional norm is six children per family. Suppose that each family would prefer some loss of parental satisfaction (e.g. have three children only) if old age support could be provided by a social security system, and that such a system can actually be set up if low fertility (three children per family) is universally adopted. A social improvement is thus again possible if all families act in concert. However, once each family is assured that the others will have low fertility and that consequently the social security system <u>will</u> be set up, private satisfactions now will be maximised by <u>not</u> playing the game, i.e. to have both social security and full parental satisfaction, i.e. high fertility. Clearly, if each family is permitted to pursue its own interest the traditional system will be a stable one. Only an enforced agreement among families, in other words government action involving coercion, can bring about a situation that was preferred to the old one by each and every individual family to begin with."[6]

In the real world situation in which direct conflicts of interest with respect to family size exist in the sense that one person's gain is another person's loss, "the negative effects are likely to be widely distributed (and) the possibility of bargaining and arranging for compensatory payments between individual families, and thereby moving towards an optimum, is practically nil." Rational parents will correctly perceive that the effects of their actions on any particular family or on society as a whole are infinitesimally small. The only workable approach would seem to be governmental intervention seeking to discourage fertility whenever it is found that the social costs of a marginal

birth exceed marginal private benefits. Such intervention may take the form of outright coercion or, preferably, an appropriate set of economic incentives or disincentives may be applied to induce socially desirable behaviour".[7] Discussion has begun on the types of alternative actions which could be taken. In this discussion ethical and moral considerations will have a place; the force of that place, however, is negatively correlated with the extent of the crisis atmosphere which exists at the time. The latter, of course is closely related to the procrastination coefficient.

References

1. United Nations, World Population Prospects as Assessed in 1963, Population Studies, No. 41, New York, 1966

2. This section follows the argument of J. J. Spengler, Population and Material Resources, Background Paper, United Nations World Population Conference, Belgrade, 1965

3. See for example, Ester Boserup, The Conditions of Agricultural Growth, Aldine Publishing Co., Chicago, 1965

4. For a fuller discussion see Raymond Dasmann, "The U.S. Environment: A Time to Decide", PRB Selection No. 25, Population Reference Bureau, 1968

5. The following section is developed from Paul Demeney, "The Economics of Population Control", paper presented to the 1969 General Conference of the International Union for the Scientific Study of Population, London, 1969

6. Ibid., p. 11-12

7. Ibid., p. 12-13

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II

THE INCREASE IN POPULATION IN LATIN AMERICA:
Social, Economic and Ethical Implications

Rodrigo Gutiérrez, M.D. (Costa Rica)

The task that has been entrusted to me is extremely difficult and complex. Latin America is really a group of countries who have in common only their language, their religion, their mixed Indian and European ancestry, and the influence of Hispanic culture. In every other respect, the twenty Latin American countries are quite different due to the cultural, political, social and economic evolution they have undergone from the very inception of Spanish colonization. There are wider social, political, economic and, in general, cultural differences between Chile and Peru, between Argentina and Panama, between Mexico and Uruguay, than there are between Cuba and Spain, between Argentina and Italy.

A typical example of three different societies located within a very limited geographical area is the case of Nicaragua, Costa Rica and Panama. These countries have no other common denominator than their language - with remarkable differences in accent -, their religion, and the Pacific and Atlantic Oceans. In every other respect - economy, origin and racial structure, history, social, political and cultural evolution - they are entirely different countries. These facts have a bearing on the subsequent discussion of this subject.

The Present Population Situation in Latin America[1)]

The distinguishing feature of the evolution of Latin America population has been the high rate of increase. This can be dramatically highlighted by the fact that around 1900 the population of the area was 60 million and by 1980 it is estimated that it will have risen to more than 364 million. In other words, in 80 years the population of Latin America has grown sixfold. By the year 2000, the population will be 756,000,000 inhabitants. By then, the population of Latin America will have grown 12½ times in one century.

One way to visualize the pace at which this area has been growing is to see the number of years it has taken or it will take the population to double at different times:

Estimated Population in	Doubled or Will Double in	Number of Years Elapsed
1900	1940	40
1920	1954	34
1930	1960	30
1940	1967	27
1950	1975	25

1) Figures given in this document have been taken from different United Nations publications.

The table shown below gives clear idea of population increase in Latin America. This table shows that temperate South America had a higher growth rate during the first 30 years of the century, as compared with the other areas because the natural increase (births less deaths) was moderately high and international immigration rather substantial. From 1900 through 1930 Argentina, Uruguay, Cuba and Brazil had strong international immigration. Carr Saunders (2) estimates that immigration for Brazil was 2½ million during that period, and that in the case of Cuba it was 857,000.

During the decade from 1930 to 1940, the other three subregions showed a higher percentage increase than temperate South America. In the period from 1940 through 1960, continental Central America held first place in rate of increase, closely followed by tropical South America.

Table No. 1

LATIN AMERICA: Population Increase Percentages[3] - 1900-20 to 1970-80

Subregion and Country	Percentage Increase for Period							
	1900-20	1920-30	1930-40	1940-50	1950-60	1960-65	1965-70	1970-80
Latin America Total	-	20.4	20.9	25.2	31.1	14.9	15.0	32.9
South America Tropical	-	19.0	22.6	25.9	33.9	15.4	15.4	33.1
Brazil	59.1	22.4	23.2	26.0	34.6	15.6	15.3	31.8
Colombia	59.2	19.6	25.0	28.4	32.4	15.0	15.3	35.0
Peru	40.1	8.3	17.9	19.3	26.0	13.8	14.3	31.8
Venezuela	4.0	22.2	25.5	33.8	47.8	18.4	19.2	42.5
Ecuador	-	8.9	21.1	28.7	32.9	15.1	16.1	37.2
Bolivia	9.9	15.5	16.5	20.1	22.7	11.9	12.6	28.8
Central America Continental	-	15.5	19.6	29.2	35.0	18.2	18.5	42.1
Mexico	6.6	14.4	19.4	30.3	35.5	18.5	18.9	43.2
Guatemala	-	22.1	24.3	27.4	34.2	15.4	15.9	36.7
El Salvador	-	15.6	14.8	20.5	30.7	17.1	17.1	37.0
Honduras	76.7	21.1	20.9	24.6	28.7	18.8	18.8	41.0
Nicaragua	33.9	16.7	17.9	28.5	32.4	18.8	18.8	41.0
Costa Rica	47.7	18.5	24.0	29.4	46.2	21.6	20.6	40.8
Panama	38.4	17.0	18.5	28.5	35.4	15.8	16.7	38.8
South America Temperate	-	27.3	18.2	20.3	22.1	10.0	9.7	20.0
Argentina	86.8	34.3	19.1	21.3	21.9	9.0	8.5	17.0
Chile	30.3	15.3	16.0	19.9	25.6	13.1	13.1	26.9
Uruguay	82.8	17.2	13.8	11.2	13.5	6.3	5.9	11.6
Paraguay	-	25.9	26.2	25.7	23.1	13.5	14.4	33.5
Caribbean	-	22.4	19.8	21.0	22.3	12.2	12.5	27.4
Cuba	87.5	30.1	19.0	20.6	23.4	10.7	10.4	20.8
Haiti	-	14.0	16.7	19.6	22.5	12.2	13.1	31.5
Dominican Republic	-	22.8	25.6	27.5	35.1	18.4	19.2	44.4
Puerto Rico	37.7	18.3	21.1	18.0	6.4	8.3	7.7	13.2

3) Miró, Carmen A., "La Población de América Latina en el Siglo XX", 1965

Annual rates of increase confirm the above statements:

Table No. 2

LATIN AMERICA: Annual Rates of Population Increase by Subregions 1920-30 to 1970-80 (per cent)

Subregion	Period						
	1920-30	1930-40	1940-50	1950-60	1960-65	1965-70	1970-80
Latin America Total	1.8	1.9	2.2	2.7	2.8	2.8	2.8
South America Tropical	1.8	2.0	2.3	2.9	2.9	2.9	2.8
Central America Continental	1.4	1.8	2.5	3.0	3.3	3.4	3.5
South America Temperate	2.4	1.7	1.8	2.0	1.9	1.9	1.8
Caribbean	2.0	1.8	1.9	2.0	2.3	2.3	2.4

It is not necessary to state in this document that population increase in Latin America - particularly after 1930, when there was a marked drop in international immigration - was mainly due to variations in fertility and mortality.

Almost all of the countries in the area with the exception of Uruguay and Argentina - the latter having started its population transition possibly toward the end of the XIX century - have been characterized by a high birth rate that suffered practically no changes of any importance until the middle of 1955, and by a mortality rate that has shown a sharp drop since 1920. It must be noted that most of the countries in tropical South America, in continental Central America and in the Caribbean still have high mortality rates, particularly as regards infants, with the exception of Costa Rica, Cuba and Panama. These latter countries, as of 1950, have managed to reduce general mortality and infant mortality, thus substantially increasing expectation of life at birth.

The present situation may be gleaned from the following data for countries having extreme (high and low) mortality and fertility figures.

Table No. 3

Subregion and Country	Period	Birth Rate (per 1000)	Death Rate (per 1000)
South America Tropical			
Peru	1955-60	42-48	13-18
Brazil	1955-60	43-47	11-16

Subregion and Country	Period	Birth Rate (per 1000)	Death Rate (per 1000)
Central America Continental			
Costa Rica	1955-59	50.0	9.6
Guatemala	1955-59	49.1	19.9
South America Temperate			
Argentina	1955-59	24.0	8.6
Chile	1955-59	36.0	12.6
Caribbean			
Cuba	1955-59	25.4	6.4
Haiti	1955-59	42.5	20.28

The population situation in Latin America can be defined by pointing out the following characteristics:

1) High rate of increase which continues to rise;
2) age structures where minors and young adults prevail;
3) strong migration from rural areas to urban areas, for economic, social and, in many cases, political reasons.

The Socio-Economic Situation of Latin America

Economic, social and cultural under-development is widespread throughout the Continent - at different levels, but generally speaking the situation is negative.

Two-thirds of the population is under-nourished[4]; in most of the countries, illiteracy varies from 40 to 70 per cent. There are only two countries whose illiteracy rate is below 10% of the total population. Two-thirds of the population does not receive medical attention. Migration from rural areas toward cities is very heavy (46% of Latin American population lives in urban zones and 25% of the overall urban population lives in cities of more than one million inhabitants). 5% of the population absorbs 24% of all of the goods consumed in the area: 45% absorbs 60% of total consumption, and the remaining 50% of the population - the lowest income group - consumes the remaining 16% of total personal consumption (5).

4) Rosarios Ottocar, "América Latina, 20 repúblicas, una nación", EMECE, 1966, p. 16 and following

5) CEPAL, "Problemas y perspectivas de laagricultura latinoamericana", Ed. Solar Hachette, B.A. 1965, p. 74, 76.

While world exports during the post-War period (1946-1962) increased by more than 267 per cent, Latin America accounted for only 115 per cent; and while in 1946, the value of Latin American exports represented 11.8 per cent of the total for the world, at present it represents 6.9 per cent (6).

A glance at statistical date will show that gross exports - in terms of quantity - of raw material from Latin America is much greater than it was before the last War. Gross exports per person is also much greater than before the last World War. But the proceeds from those raw materials, in proportion to the prices for goods imported, is much lower (7).

From 1952 to 1962, the unit value of exports from developing countries to developed countries dropped by 5%; and if such value is compared with the 1955 value, the figure is 12%. In the case of Latin America, that decrease was enough to wipe out the effect of all public and private capital imports between 1950 and 1960 (8). On examining the total funds transferred to Latin America and the service charges, it will be found that during the last few years, the latter figure is higher than new funds; and in other cases, the net balance in favour of Latin America is comparatively small (9).

Further according to CEPAL studies, during the seven years from 1955 through 1961 only, the group of Latin American countries has lost more than US$10,000,000,000 due to price differences (they rise the price of the things sold us and lower the price of the products we sell them). The Latin American countries received, from assistance and loans of all kinds, the sum of US$6,811,000,000 but not over the same seven-year period but from 1945 to 1962 - that is over a period of 17 years. This means that, even though foreign aid were doubled, if things continue along this same road to deterioration and at the same rate, there will be no amount of foreign resources capable of restoring balance, particularly considering that Latin American economy is based on the exportation of agricultural products and on the operation, by foreign powers, of extractive raw materials (ore, oil, timber, etc.) which are depletable. What fate is in store for Latin America when all of its wealth has been depleted, if it has not achieved full industrial development? Economic conditions for the large Latin American masses cause altogether unsatisfactory living conditions. For example, in Ecuador, Nicaragua and Paraguay, almost 50% of the people do not have water closets in their dwellings. From 35% to 60% of the people in Colombia, El Salvador, Mexico and Haiti do not have running water in their homes. On the basis of information on illiteracy, urbanization, active population in the primary sector, and per capita gross national product, the General Secretariat of the OAS prepared a gross index for social and economic development (10).

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6) Felipe Herrera, "América Latina integrada", Ed. Losada, B.A., p. 56.

7) Josue de Castro, "Ensayo sobre subdesarrollo", Ed. Siglo XX, B.A., 1965.

8) U Thant, "El Gran Viraje", El Correo de la UNESCO, October 1965, p. 31.

9) Rául Prebisch, Third Meeting of Experts of the Special Committee for Latin American Coordination (CECLA), July 21, 1966, Mexico.

10) "Estudio Económico y Social de América Latina", 1963, Vol. II Social Aspects, Washington, D.C., Pan-American Union, p. 228.

Calling the best conditions 10, the following are the ratings for the various countries: Argentina, 9; Cuba, Chile and Venezuela, between 8 and 9; Bolivia, Ecuador, El Salvador and Guatemala, less than 5; and Honduras, Nicaragua, Paraguay, Peru and the Dominican Republic, o.5.

The rapid rate of urbanization and the increase in population create an urgent demand for housing. It is estimated that the housing shortage in Latin America ranges from 15 to 20 million units. To eliminate the shortage and meet the demand for housing created by population increase would call for building from 8 to 11 units for every 1000 inhabitants. Actual construction averages 2.5 units for every 1000 inhabitants. Even if this were doubled, the number of units produced would not be enough to meet an ever increasing demand.

Latin America has, for many years, been suffering from high, chronic unemployment levels, and there has been no relief in this respect during the period starting with the Alliance for Progress. On the contrary, the problem has become worse, because the first "waves" of the population explosion of the '50s are now reaching us. According to recent information, unemployment levels in Bolivia are more than 16 per cent; in Trinidad and Tobago, 15 per cent; in Bogota, Colombia, 12 per cent; and in Uruguay, 11 per cent. The other countries oscillate around these figures. But the phenomenon of open and frictional employment is less than the problem of under-employment, which keeps millions of workers working for a few hours a week. Beginning in 1970, Latin America will have to generate a 3% increase in employment just to keep the present levels of unemployment. To be able to do that, it will be necessary to have a general rate of economic growth of about 6 per cent a year. The general average was 4.5% for the past decade.

One last factor it is worth mentioning to give an idea of the problems facing Latin America is the educational sector.

All of the countries have, during the past decade, made an impressive effort to increase enrollment at the six-year primary school. The rapid increase in student population - 3.2% a year for the period from 1960 through 1967 - has exerted considerable pressure on school facilities.

If the effort continues and the number of students who complete their studies improves, by 1971 a total of 40,000,000 children will attend school and by 1980 the figure will be over 56,000,000 which suggests the need to prepare teachers. During that same time, in order to meet the requirements of an increasing student population, there will have to be 500,000 new teachers.

The Political and Economic Structures in Latin America

The evolution of political institutions in all of the countries in Latin America - with very few exceptions - has often been interrupted by a long and complex history of coups d'états, imperfect plebiscites that have sunk this part of the world in a permanent crisis. The regular armies spend between 20 and 40% of the national budgets in all of the countries, with the exception of Costa Rica, that has no army.

The social and economic structure of all of the Latin American countries has made possible the consolidation of stratified social groups made up of an exceptionally wealthy and opulent, minority class, a small middle class, a very large poor class that is not aware of their standard of living, and an immense, impoverished human mass that is totally excluded from the cultural evolution.

The poor class and the impoverished class, whose limits are precise, constitute the largest sector in all of the Latin American countries. The possibility of improvement for this human group - that can easily amount to 200,000,000 inhabitants - would seem to be very limited under the present socio-politico-economic system of Latin American societies. The standard of living of the Latin American man who is born in the poor and excluded strata are the result of the action of those structures when the conditions for progress and economic improvement were optimum, particularly during the first half of the twentieth century. It would seem impossible, under the present international political circumstances and the conditions for rapid progress by any human group, in modern world, to have a miracle happen and produce a rapid evolution in the social, economic and cultural field of these peoples, in the second half of the twentieth century.

The factor of fast population increase, one of the largest in the Universe, will reduce even further their possibility of improvement. The overall growth of the economy, for the geographical sector, has been under the goals set in Punta del Este for the sixties.

But population increase is only one of the variables that enter into the characteristics of social, economic and cultural development of the Latin American peoples. There are other factors that, if they are not subjected to change, will maintain the present crisis and the consequences cannot be foreseen.

The complex land tenure system. The mechanism for the operation of the natural resources of the area (most of which are in the hand of rich countries). The great difficulty of all kinds for the international marketing of their agricultural products, completely out of the control of the producing countries. The inability of most of the Latin American capitalists to share in the industrialization process because they lack the spirit of enterprise and because they have not outgrown their inadequate and insufficient working methods. The impossibility to prepare human resources of their own to hasten the development process, and the permanent flight of qualified personnel (11) toward the richer countries. The participation of the armed forces in the political process and the defense of the power structure (12) by the regular

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11) In 1968, more than 66,000 citizens of all of the Latin American countries - all of them highly skilled - emigrated to the United States, attracted by better salaries and working conditions than they had in their own countries.

12) In the last five years, more than ten coups d'états by the army in different countries have consolidated. Frustrated attempts at military overthrowing of the government have exceeded a dozen. Repression by the armies on behalf of constituted governments has been brutal. In Colombia alone, from 1948 to 1958, 250,000 persons died as a result of the political crisis and the violence it produced. In the last five years, political violence has killed more than 10,000 persons (men, women and children) in Guatemala, where only four presidents in the last seventy years have managed to complete their term of office.

armies. Latent racial problems among the indigenous population, the blacks, the mestizoes and the white minorities; the political administration of these countries by leaders fabricated from the midst of the very groups that, nationally and internationally, control the economy of the countries, or by leaders with popular backing, who are usually corrupt or in the process of becoming corrupt through their undue thirst for power and their anxiety to engage, without loss of time, in lucrative deals in cahoots with local capitalists and international finance groups. The full control of political power exercised by the national and international economic power through laws and law-contracts of specific nature, thus preventing the adapting of politico-economic structures towards social and cultural development goals for the people. The indifference and very often the tolerance on the part of the Church toward the defense and consolidation of the status quo. The conflicting policies, throughout the past century, of the Government of the United States of America toward this group of countries that have lived under its economic and cultural influence.

All of these and many more are the factors that cause the crisis through which the Latin American community is going through, and that definitely affect - at the present time - one way or another, the course that these countries will follow during the next thirty years of their history.

From the ethical, social and economic points of view, the Latin American countries are faced with a dilemma: the most serious one in their history: a) adjust their political and economic structures to facilitate development; b) intervene in the variables that determine the crisis in order to change them in such a way that they will facilitate development and, c) define, under their own cultural framework, the development goals they want to reach.

The political and economic restructuring of each Spanish American country cannot be forced by foreign powers. Each country has before it, its own challenge and the intelligence and the mystique to find their own solutions. Due to reasons mentioned at the beginning of this paper, emphasizing the great historical, cultural, social, economic and political differences, humanity will have to await twenty Latin American revolutions rather than "one Latin American revolution".

Something entirely different will have to happen as regards the action to influence the variables that maintain the state of crisis in this part of the world. The relationships with the rich countries to renegotiate the price of their products, the exploitation of their natural resources and of the sub-soil, the demilitarization of Latin American countries, the integration of trade and production areas, the rationalization of their human reproduction rates and, in general, the planning of integral development, will have to be the result of joint, cooperative action through Latin American organizations created for the purpose. To define development goals is a task for Latin Americans and for the human race. It may seem like a silly thought, to the illustrious members of this Conference, if I say that man will have to turn his gaze to the simple and fundamental things of his existence: shelter, food, clothing, education for living, recreation. It is quite possible that such an aspiration - to me fundamental and important - may find no room in the modern society of the rich nations, that chase after the glory of space conquest and the complicated comfort created for the minorities by their economy of con-sumption.

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THE NEXT THIRTY YEARS - DEMOGRAPHIC PROSPECTS FOR TROPICAL AFRICA

by Samuel Kwesi Gaisie
(Ghana)

The world is confronted with an unprecedented rate of growth of the human population. The problem is most acute in the developing countries, including Africa which has one of the highest rates of population growth in the world. By world standards, death rates in Africa are still high; but they are falling dramatically as a result of the application of low cost public health measures and imported medical technology. The use of insecticides as a protection against malaria has been estimated to cost not more than twenty-five U.S. cents per capita per annum. But while death rates are falling, fertility rates remain substantially stable, thus making for a high rate of population growth of about 3% per annum in most African countries.

The present paper examines demographic prospects for Tropical Africa (i.e. West, East and Middle Africa) from 1970 to the year 2000, using mainly the U.N. medium variant projections as the basis for discussion. In the light of the available evidence we cannot produce anything better than a sketch of the demographic picture of the area in question. The second part of the paper is devoted to an examination of some of the social and economic implications of the rapid population growth in Ghana.

The selection of Ghana as a case study is dictated by the author's familiarity with the developments in the country and also by lack of adequate and relevant social and economic statistics on which to base a similar analysis for other Tropical African countries. However, Ghana's case may be used as a model for appraising demographic problems in other African countries. The examination of Ghana's case is also an attempt to show in greater detail some of the socio-economic and demographic prospects for Tropical Africa. It must be noted that a complete economic-demographic theory would be needed to take full account of the extent to which demographic factors influence economic development and vice versa. Therefore the present analysis is confined to some of the ways in which demographic factors may affect social and economic development; but the influences operating from the opposite direction will be mentioned insofar as they bear directly on the subject.

Prior to the Second World War very little was known about the size and the structure of Tropical Africa populations. The available demographic statistics were of dubious validity and in some cases population estimates were based on tax registers and "impressionistic surveys". The quality of the results of the censuses conducted during the first four decades of the present century was so questionable that no conclusions about the past population trends can be arrived at ". . . without deep comparative study of administrative documents and scholarly reports". (1) However, post-world war II witnessed an improvement in data collection in Tropical Africa.

In the 1950's a series of demographic sample surveys was conducted in many African countries, particularly in the Francophone countries. The main purpose of these sample surveys was to provide detailed and reliable information on fertility, mortality and the age and sex structures of the populations. The

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*Many developing countries outside Africa have similarly experienced the benefits of low cost public health measures. In Ceylon, for example, DDT reduced malaria cases between 1942 and 1954 from over 3 million to under 40,000

(1) United Nations, World Population Prospects as Assessed in 1963, New York, 1966

censuses and surveys conducted during this period yielded more reliable demographic data. They were utilised for revising the estimates prepared for the earlier periods, which, it was discovered, were mostly under-statements.

The 1960's saw considerable improvement in census-taking in Tropical Africa with respect to techniques, objectives and scope. The departure of the colonial governments brought the Africans face-to-face with the task of nation building and it was at this juncture that the African governments became aware of the need for statistics as a tool for efficient, socio-economic planning. Africans, therefore, devoted fractions of their meagre national incomes to the collection of better demographic statistics and, in this exercise, they did better than their colonial masters: "The average cost of British West Africa censuses in 1931 was a tenth of a penny per head of enumerated population. in 1948, East Africa spent 2d. per head as compared with 1s. 2d. in Ghana in 1960". Nigeria spent two shillings per head on her 1962 and 1963 censuses and according to Caldwell, in Australia, where the income per head is much higher, the census programme cost approximately the same amount of money per head.

Despite the bold attempts which have been made by Africans to collect better census data, very little progress has been made in the collection of vital statistics. Thus, a complete and efficient registration system which will provide the complementary data needed for the measurement of dynamics of population growth is non-existent in most countries in Tropical Africa, although registration of vital events is not unknown in this part of the world. Registration of births and deaths was made compulsory in certain towns and townships in 1935 in Ghana and some parts of Uganda had a registration system as far back as 1904. Under Belgian administration, an almost nation-wide registration system was instituted in the Republic of Congo Kinshasa and the statistics collected provided valuable information for the control of data obtained through a nation-wide sample survey in the late 1950's. Nevertheless, almost all the reports and articles which have been written on the registration systems in Tropical Africa contain statements about the incompleteness and inefficiency of the systems. In most areas the registration of births and deaths is confined to the cities and the towns and the statistics compiled can hardly be used to draw a reliable demographic picture of the country as a whole.

This brief outline of the status of population data and vital statistics in Tropical Africa throws some light on the inadequacy and low quality of the demographic material at the disposal of the student of African Demography. Hence, the analysts of the dynamics of population trends of Africa have relied more on sample survey data than on population census data and vital statistics for the levels and trends of vital rates.

I. The Demographic Situation in Tropical Africa

Demographic developments in Tropical Africa in recent years have been described by various authors and no attempt will be made here to reproduce them in detail. The main features are as follows:

Fertility - it is high and stabilised. Estimated crude birth rates range from 30 to 60 per thousand, and the birth rate for Tropical Africa as a whole probably lies between 47 and 49. These rates imply that with an estimated population of 263 million for Tropical Africa in 1970, about 12.5 million persons are added to the population every year. Other indices confirm the high fertility rates: an African woman passing through the childbearing age brackets, i.e. 15-44

or 15-49, gives birth on the average, to between 4 and 8 children; a total fertility rate for Tropical Africa has been estimated at 6.5 children per woman, and gross reproduction rates of 3.5, 2.9 and 2.5 have been estimated for West, East and Middle Africa respectively. The corresponding figure for Africa as a whole is 3.1. Some observed that "Africa had the highest birth rate amongst the world regions; the rates in other regions range from 24 in Northern America and the U.S.S.R. to 43 in South Asia, the world average being 34%; and Coale described the situation as follows: "Only Latin America from Mexico to Peru and Brazil has fertility rates this high".

Mortality - estimates of crude death rates for African countries range from 14 to over 40 per thousand population. Regional estimates for the period 1956 to 1960 are 29 for West Africa and 22 for East-Southern Africa respectively. However, national estimates show wider variations - i.e. crude death rates of 20, 9.9 and 19 for Kenya (1948), Reunion (1960) and Zambia (1950) respectively may be compared with 23, 35 and 40 for Ghana (1960), Upper Volta (1960-61) and Guinea (1954-55) respectively.

Infant mortality rates stretch from 100 to over 300 per thousand live births and childhood mortality is also high by world standards. "There are probably still parts of Tropical Africa where not many more than half the children born survive to their fifth birthdays". (1) The expectations of life at birth have been estimated to vary from between 26 and 37 in Mali and Guinea (1955-57) to over 50 or more in certain Northern African countries:

Table 1

Estimated Expectations of Life for some selected Tropical African and European countries

Country/Region	Year	Expectation of Life (in years)
West Africa		
Ghana	1955	39
Senegal	1957	37
Ivory Coast	1957-58	35
Guinea	1954-55	33
Upper Volta	1960-61	32
Mali	1957	26
Togo	1966	32(males) 39(females)
East Africa		
Mauritius	1951-53	51
Reunion	1951-55	51
Zambia	1950	37
Tanzania	1957	37.5
Middle Africa		
Angola	1940	35
Central African Republic	1959-60	35
Congo Kinshasa	1950-52	39

(1) J. C. Caldwell, op. cit., 1968, p. 11

Country/Region	Year	Expectation of Life (in years)
Sweden	1960	73
Norway	1951-53	73
United Kingdom	1960	71
Denmark	1951-55	71
Hungary	1958	67
Czechoslovakia	1960	70
Yugoslavia	1958-59	63
Malaya	1956-58	57

Sources: United Nations, Demographic Year Book, 1966, New York 1967, Table 21, p. 562 ff., and also, S. K. Gaisie op cit, 1969, p. 22

Although the information on mortality levels and trends is mostly unreliable there is visible evidence that death rates are falling, perhaps, more rapidly than they did in the developed countries during the nineteenth century. General socio-economic progress and efficient implementation of policies in regard to the health of the people should increase the expectation of life at birth to between 50 and 65 years in Tropical Africa by the end of the century. Stolnitz observed that "although it would be surprising to me if a considerable number of population did not exceed the 60 level in the next decade or two, it would be more surprising if a great many more did not reach 50 within the same future". A survey of Commonwealth Africa revealed that "Every government in Commonwealth Africa regards health as a major concern and all unqualifiedly feel that the most rapid reduction possible of death rates is a desirable aim. Most point to the expenditure of a large proportion of the budget on health, the extension of health services especially into rural areas, mass campaign against specified diseases".

Rate of Growth - It will be seen from the fertility and mortality estimates presented above that the populations of Tropical Africa are growing at a rate of between 1.0 and 2.7% per annum. A model rate of 1.9% per annum has been estimated for the region as a whole. Between 1960 and 1966 the populations of West, East and Middle Africa were growing at an annual rate of 2.3%, 2.4% and 1.9% per annum respectively. Comparison of these rates with 0.9 for Europe, 1.4 for U.S.S.R., 2.0 for Asia, 1.5 for North America and 2.8 for Latin America shows that Tropical Africa rates are among the highest in the world. The figures in Table 2 indicate fantastic growth rates in certain Tropical African countries, e.g. Malawi and Zambia.

The projection of the rates of natural increase indicates that for Africa as a whole the rate would increase from 2.3% in 1960-1965 to 2.7% in the period 1995-2000, an increase of 17%. The corresponding rates for West, East and Middle Africa of the same period are 2.7% to 3.2%, 1.8% to 2.6% and 1.5% to 2.5% respectively. Thus, for the next thirty years, the Tropical African populations would be growing at rates twice as high as than in Europe in the nineteenth century. In areas where emigration and immigration have been on a large scale the rate of natural increase would either exceed, or be exceeded by the rate of population growth although at present, as Caldwell notes, " .... for most of the major countries of Tropical Africa the rate of natural increase and the rate of population growth are not significantly different". The national rates show that, other things being equal, population growth within the next thirty years would be faster in some countries than others. For example, the

Table 2

Annual Rates of Increase for some Selected Countries

Country	Year or Period	Rates
Cameroon	1960-65	2.2
Central African Republic	1959-60	2.2
Congo (Brazzaville)	1960-61	1.6
Congo (Kinshasa)	1955-58	2.2
Ghana	1960	2.8-3.0
Guinea	1955	2.8
Ivory Coast	1961	3.0
Kenya	1962	2.9
Liberia	1962	1.6
Madagascar	1956	3.6
Malawi	1966	2.4
Niger	1960	3.2
Nigeria	1963	2.0
Sierra Leone	1963	1.2
Sudan	1956	2.8
Tanzania	1957-58	1.9
Zambia	1963	3.0
Angola	1960	1.7
Mozambique	1960	1.3
Mali	1960-61	2.2
Senegal	1960-61	2.4
Togo	1961	2.7
Uganda	1959	2.5

Source: Demographic Year Book, 1966, New York, 1967, Table 2, p. 96

average rate of growth would climb to 4.0% in Ghana and 3.9% in Kenya by the year 2000. At such rates the population in the two countries would be doubling in less than twenty years.

The U.N. medium projections* indicate that the existing African population in 1960 would increase by 44% between 1960 and 1975 and within the next thirty years - i.e. 1970-2000 - the population would increase by 122%; corresponding percentage increase for West, East and Middle Africa are 51%, 34% and 29% for 1960-1975; 164%, 102% and 94% for 1970-2000. The populations of West and East Africa would be doubling in less than twenty-five years whilst that of Middle Africa would double in less than thirty years (see Table 3).

*The medium estimates are preferred to the "High" and "Low" estimates because they are " .... intended to represent the future population trend that now appears most plausible in view of what is known of past experience and present circumstance in each region".

Table 3

Population Estimates for Tropical Africa: 1960-2000
(population in thousands)

Region	1960	1970	1980	1990	2000
West Africa	85,973	112,862	149,818	201,832	277,192
East Africa	75,032	90,397	112,515	142,528	183,119
Middle Africa	28,345	33,299	40,592	50,610	64,519
TOTAL	189,350	236,558	302,925	394,970	524,830

Source: U.N. World Population Prospects as assessed in 1963, New York, 1966, Table A.32, p. 134

Age Structure

The high birth rates and declining mortality are clearly reflected in the age structures of the populations. The proportions of persons aged under 15 years and 65 years and over would be increasing in all the major regions of Tropical Africa between 1970 and 2000 whilst the labour force would be decreasing during the same period (see Table 4). It will be seen from Table 4 that the proportion of persons under 24 would be higher in West Africa (67%) than in East Africa (60%) and Middle Africa (58%). The problem of providing education, food and shelter for the infants and the youth would be more acute in high-fertility West Africa than in the other regions although the problem would not be all that easy to solve in the latter regions. On the other hand, the provision of jobs and facilities for the elderly would be a more serious problem in Middle and East Africa than in West Africa. The dependent populations in the three regions form more than 40% of the total population in 1970, and the proportions aged under 15 years and 65 years and over would be 48%, 44% and 43% respectively. Thus, the ability of the countries to equip and train their working forces will depend on the proportion of the national income and investment which would be diverted into providing social services for "unproductive" sections of the population.

Table 4

Main Functional Groups of Population (per cent of total population)

Age Group	West Africa			East Africa			Middle Africa		
	1970	1980	2000	1970	1980	2000	1970	1980	2000
0 - 4	18.8	19.5	18.9	15.9	16.5	16.5	15.4	15.7	16.4
5 - 14	27.5	27.7	27.6	24.8	24.8	25.4	23.5	24.5	25.2
15 - 24	19.5	19.5	19.1	19.6	18.8	19.1	18.6	18.2	18.8
15 - 64	51.6	51.7	51.1	56.4	55.7	54.7	57.5	56.1	54.6
65 and over	2.1	2.2	2.4	2.9	3.0	3.4	3.6	3.7	3.8

In the words of Coale, "Tropical Africa is now beginning to encounter the whole range of new problems that other developing countries know very well - the barriers to social and economic progress that come with extremely rapid population increase." The implications of this statement will now be examined with reference to Ghana which has one of the highest rates of population growth in Tropical Africa.

II. The Demographic Situation in Ghana

The following are the main features of the situation in Ghana:

Fertility: it is high and stabilised. A crude birth rate (i.e. the ratio of the number of births recorded in a year to the total population or the mid-year population) of 50 per thousand has been estimated for the country. This implies that with a population of 8.5 million about 425,000 births are added to the population every year. It has also been estimated that every Ghanaian woman passing through the childbearing-age brackets - i.e. 15-49 - would bear, on the average, 6.9 children.

Our estimates also show that a woman passing through the childbearing period would, on the average, replace herself with two daughters who would grow to become future mothers. Thus, a woman in the present generation would be represented in the next generation by two women. These estimates show that Ghana is one of the high-fertility countries in the world.

Mortality: the measure used here is similar to that used for measuring the fertility rate, namely, the ratio of deaths to the total population. This yields a crude death rate for Ghana of 23 persons per 1,000 population per annum. It has also been estimated that out of every 1,000 infants born 160 would fail to reach their first birthday and that in 1960 an infant born would, on the average, live for 40 years. These rates reflect the existence of comparatively high death rates in Ghana but probably the rate is fast declining as a result of the widespread application of preventive and curative medicine.

Immigration: in 1960, 12.3 per cent of the total Ghana population were immigrants and about 96% of the foreign-born immigrants were from the neighbouring African countries of Togo, Upper Volta and Nigeria. About 86% of the immigrants were unskilled labourers, semi-skilled farm labourers, traders, etc.

The rapid growth of Ghana's population may, therefore, be attributed to a constant high fertility rate, declining mortality rate and an inflow of immigrants from neighbouring African countries.

The rate of Growth:

1921-1931	3.2% per annum
1931-1960	2.7% per annum
1921-1960	2.8% per annum
1948-1960	3.1% - 4.2% per annum

Our estimates, however, show that the plausible rate of population growth may probably be between 2.7% and 3.0% between 1948 and 1960.

It will be seen from the fertility and mortality estimates presented above that the population of Ghana has been growing at a natural rate of 2.7% per year. Estimates prepared by the author indicate an annual rate of growth ranging between 2.8% and 3.0% per year. In comparison with rates of 1.5% for North America, 0.9% for Europe and 1.4% for U.S.S.R. (1950-60), Ghana's rate of population growth between 2.7% and 3.0% would result in the doubling of the population in 25 years or less.

Effects of Population Increase:

Table 5

Population of Ghana - 1921-2000 (in thousands)

	1921	1931	1948	1960	1965	1970	1975	1980	2000
Fertility unchanged	2,298	3,164	4,118	6,727	8,803	9,521	11,336	13,624	29,000
Fertility declining	-	-	-	-	-	-	-	13,434	24,000

Source: S. K. Gaisie, "Dynamics of Population Growth in Ghana", 1969, Table 4 2A and 2B, pp. 59-60

Our projections also show that the population of Ghana would increase very rapidly to reach 29 million on the assumption of sustained fertility and 24 million on the assumption of declining fertility in the year 2000.

(i) Age Structure and Dependency Load

The 1960 Census figures revealed an unfavourable age distribution for Ghana. Children under 15 years of age made up about 44.5% (the corresponding percentage per indigenous Ghanaians was 47%) of the population and persons aged 60 years and over accounted for five per cent of the population. These two age-groups are usually referred to as the "dependent" age-groups and the age-group, 15 to 59, as the "productive age-group".

The first two age-groups combined, and expressed as a ratio to the productive age-group, works out to 98 dependants per 100 workers in Ghana, which may be compared to the 1960 figures of 60 and 70 for U.K. and France respectively. On the basis of population projections prepared by the author[1] the dependency load in Ghana would increase from 109 in 1975 to 115 in 2015, if the current fertility rate remains constant. The load would, however, be reduced from 109 in 1975 to 74 if fertility declined to half its current value in 2010.

Such a heavy dependency load tends to retard economic advancement. The view that the dependency burden in developing countries could be lightened by putting children to work early and making old people continue to work as long as they are physically and mentally capable may be rebutted by the fact that in a non-traditional economy the contribution of children under 15 years of age and

[1] S. K. Gaisie, op. cit., 1969, Table 44B, p. 67

persons aged 60 years and over will be too insignificant to lighten the load.

The heavy load of dependent children also makes it difficult to save for investment in equipment for economic growth. Whilst we are not unaware of the importance of investment in human resources, the rapid increase in population raises the issue of how the country can afford to educate and equip the children sufficiently for active participation in the task of economic reconstruction.

(ii) Birth Rate and School Population

A more detailed analysis is needed to bring the problem of educating the youth into proper focus. High birth rates operate in conjunction with decreasing infant childhood mortality to increase the number of children of school-going age. On the basis of the projected population, indigenous Ghanaian children aged five years would increase by 47% between 1960 and 1970 and by 35% within a period of the ten years following 1970.

The entire elementary school-age population would increase by 40% between 1960 and 1970 and would almost double by 1980. The percentage increases among the population of the post-elementary levels of education would be 31% between 1960 and 1970 and 93% by 1980. The number of persons surviving to age-group 19-24 years (i.e. school-age population of the higher education institutions) would also rise by 30% within the same period.

These percentages represent very large increases in the total number of children, adolescents and adults for whom primary schooling and other forms of education should be provided. Providing education for the younger generation entails the use of the huge amounts of resources which would have been devoted to more directly productive uses. Schools have to be built, teachers of all grades have to be trained properly and other expensive materials and equipment have to be provided.

In 1960, 73% of the total population aged six years and over had never attended any school or, in terms of formal education, could neither read nor write. Of those who had received some kind of education only 4.5% attended secondary school and 1.8% reached the fifth form. Whilst 1% had spent six years in the secondary school, only 0.2% spent four years in the technical institutions and about 1% had spent three or more years in a university.

Of the 740,101 persons attending school at the time of the Census only 0.2%, 0.4% and 3% were in the university, technical institutions and secondary schools respectively. When these figures were standardised by age it was found that very few people in the various educational age-groups had the opportunity to equip themselves with the skills and the knowledge needed for rapid economic advancement.

(iii) Population Growth and Per Capita Production

We have already indicated that Ghana's population is growing at an annual average rate ranging between 2.7 and 3.0% and that this means the doubling of the population in less than 25 years. A projected population of indigenous Ghanaians (projection based on fertility rate of 6.9 children per woman and a gradual decline in the mortality rate in such a way that the expectation of life at birth increases by half a year annually) shows that the population would double itself in about 23 years or less on the assumption of constant fertility

and between 25 and 30 years on the assumption of declining fertility. The projections also reveal that if fertility remains unchanged for the next thirty-three years the indigenous population would increase at an annual rate of growth of between 3.0% and 3.6% increasing to a little over 22 million in the year 2000.

It has been noted that the faster the population grows the greater the investment required to maintain a given level of output per head. It has been estimated on the basis of a capital output ratio of four to one that with a population increasing between two and three per cent per year a country must invest between 8% and 12% of her national income in order to keep a given standar of living constant. The problem is not only to be able to invest 12% of the national income - in itself a difficult task to undertake - but also to save and invest yet more if we are to avoid a reduction in output per head as a result of population growth.

Professor Arthur Lewis remarks: "When we remember that the least developed countries barely manage to invest five per cent of their national income per annum, it is clear that their standard of living must fall if they indulge in the luxury of increasing their populations by two or three per cent per annum". For Ghana, it is known that "in order to raise the levels of living of the population by say 2½% per annum there should be a real rate of growth of the economy of just over five per cent". Such economic targets are difficult to achieve because they involve "considerable expenditures on education and other public services, a doubling of current capital formation and many changes in beliefs and institutions".

It was estimated that between 1960 and 1965 Ghana had to invest over 10% of her Gross National Production in order to keep per capita income at a constant level or in order to absorb the increase in its population. In terms of money Ghana spent $180 million in 1966 to absorb the increase in its population (i.e. GNP estimate for 1966 at 1964 prices). This sum of money could have been used on capital formation instead of on recurrent expenditure designed to maintain existing standards of education, health, housing, etc.

(iv) Population Growth and the Labour Force

One of the social and moral obligations of a government is to provide productive employment for both male and female adults, for the demoralising effects of unemployment create all sorts of social and economic problems in the society. The economy of Ghana is plagued by problems of unemployment and under-employment. In 1960 about 6% of the economically active population aged 15 and over reported as unemployed; but among the employed group were the under-employed. A major increase in the number of productive opportunities will be needed to solve the current unemployment and underemployment problems. It is also equally important that the workers should be trained and equipped with the relevant skills and knowledge. But the rapid growth in the labour force adds greatly to the difficulties of training and providing jobs for the workers.

On the basis of the projected population of indigenous Ghanaians, the labour force would increase from about 3.4 million in 1965 to 6.1 million in 1985 and 2000 respectively. The projections also show that the indigenous labour force would increase at the rate of 2.8% between 1965 and 1970 and at the rate of 3.7% per annum in the period following 1970; these rates would raise the number of workers to 8.7 million in 1995 and 18.6 million in 2015. On the assumption

of declining fertility the rate would be reduced from 3.5% between 1990 and 1995 to 3.0% per annum after 1995, thus increasing the labour force from 8.6 million in 1995 to 15.6 million in 2015. The migrant labour force would increase from 511,401 in 1960 to 4.8 million in 2015 on the assumption of declining fertility and from 511,401 in 1960 to 6 million in 2015 on the assumption of constant fertility.

The increases in the labour force would mean in effect that an annual increase of three per cent or more in the number of jobs would be required if underemployment and unemployment are to be avoided. Whilst there is a great need for increasing output per worker of the existing labour force the faster growth of the labour force calls for extra capital to provide equipment and training for the additional workers. The greatest numbers in the labour force could add to the total product only if there is enough capital to equip and train the additional workers to be as productive as the existing labour force.

The problem of providing future jobs in Ghana may also be considered in terms of changes in the occupational pattern which accompany the process of modernisation and industrialisation. During the process of industrialisation, jobs are created outside the traditional occupation - i.e. agriculture - and this generates a movement of workers from the agricultural sector to the non-agricultural sectors of the economy. The majority of these new jobs require high-level and middle-level personnel - i.e. doctors, engineers, technicians, etc. We should not lose sight of the fact that education and training of high-level and middle-level personnel entail massive expenditure and a considerable length of time.

But in order to increase the level of productivity and to raise the standard of living in the short run skilled labour is required. It has been observed that "the requirement for high-level manpower is the most difficult to meet, both because of the present shortage and because of the intensive training that is necessary to produce such manpower. There is no general shortage of labour, but the shortage of high-level workers may be one of the most serious bottlenecks encountered in the execution of the plan". (1)

The problem of producing high-level and middle-level manpower may become more acute and this would lead to the slowing down of Ghana's economic and social development.

Declining fertility will only slightly affect the supply of labour force for the next 15 years because children born during this period will not enter the labour force until they are 15 years or more. Thereafter the labour force will begin to grow less rapidly and it will therefore be easier to improve the quality of the labour force. An increasing number of women will be entering the labour force because a smaller number of them will be nursing babies and looking after small children than would have been the case if fertility had remained high.

Some Common Arguments in Favour of High Fertility

Some people hold the view that Ghana can accommodate a much larger population. But from time immemorial the power of a nation has always been the product of its advanced technology and efficient organisation. Political, military and economic power depends more on the development of technology than on

(1) Tony Killick, The Factors of Production, in "A Study of Contemporary Ghana, Vol.I - The Economy of Ghana", 1966, p. 151

raw numbers or rapid population growth. As Caldwell says, "even war in the modern world is won less by numbers than by productive strength and by the standard of living and hence training and skill of the combatant".

The issue is not how many people the country can accommodate but rather at what level are they going to live. Moreover, a decline in fertility does not mean that the population will stop growing, but that a reduction of population growth will facilitate the process of technological modernisation. The country may decide to have a much larger population but this objective should be achieved without inflicting undue hardships on the people.

Another related argument is that large numbers are required to provide a market for manufactured and other goods. But these larger numbers without a strong purchasing power do not provide the market needed to reap the economies of large-scale production. It is important to note therefore that the "problem" is neither completely demographic nor completely economic. Naturally, the proble is one of population for those who think that rapid demographic growth impedes economic development and one of development for those who think that because the economic growth is very low it cannot adequately take care of the growing numbers of Ghanaians.

It should be clear, however, that in this dilemma there is no single answer. In either situation it will be necessary to work with both demographic and economic variables. In other words, the twin problems of production and reproduction should be tackled together. The economy as well as the population should be planned. As Dr. Sen (ex-director of F.A.O.) said - " . . . providing food for the growing millions of the developing countries with a view to achieving the minimum nutritional goal will be a formidable task reckoned in terms of resources, cost and effort. There seems no alternative but to fight the battle on both fronts, agricultural as well as population".

To avoid population pressure of the magnitude of that of India and China, it is necessary that family planning should be incorporated into our overall social and economic development plans. After all, since we plan for human beings the population factor should also be taken into account. The various aspects of development, i.e. education, employment freedom, maternity and child welfare and population planning must march together.

Some of the problems outlined above are encountered in other Tropical Africa countries. All the available demographic statistics indicate that major problems will emerge in Tropical Africa where rapid population growth will exert pressures on land and on all other social facilities and resources.

It has been envisaged that rapid developments in human intellect, science and technology would help solve some demographic and socio-economic problems in developing countries. Cheap and reliable contraceptives, improved or new techniques for the education of adults and children are among some of the innovations which modern technology would place at the disposal of mankind within the next thirty years or so. The availability of the innovations by the end of the century and the capability of the developing countries to absorb modern technology are some of the crucial questions which will have to be answered before one embarks on the assessment of relative influence of the modern technology on the national economies and population structures in

Tropical Africa.

Population Policies and Family Planning

The social and economic implications of rapid population growth in Tropical Africa have aroused interest of some governments and voluntary organisations in population control. The findings of a survey of population policies in Africa revealed that very little knowledge of contraception and other methods of preventing or terminating pregnancy existed in the French-speaking Tropical African countries where French laws and administrative practices have generated indifference towards population questions. Caldwell who conducted the survey observed that all the countries still controlled by Portugal, France and Spain, i.e. Angola, Comore Islands, Reunion, Equitorial Guinea, Mozambique, Portuguese Guinea, etc., failed to reply because their administrations have never concerned themselves with population policy and because their citizens have never had the choice between using modern family planning methods and not doing so. Madagascar and Somalia did not believe that their populations would grow so rapidly as to "jeopardise economic advance" and Upper Volta thought that problems arising from rapid population growth could be solved by re-distributing the internal population. By contrast, the English-speaking Tropical African countries have for some time shown considerable interest in family planning, and the early 1960's saw the establishment of family planning clinics and associations in such countries as Nigeria, Sierra Leone and Mauritius. There were similar developments in Tanzania, Ghana, Dahomey, Reunion, Comores, Gambia, Zambia and Ethiopia. Attempts are now being made to introduce family planning in the remaining Tropical African countries.

The results of KAP studies conducted in some Anglophone countries indicate that/majority of the educated Tropical Africans and the urban elite are /the becoming more and more interested in family planning. In the urban areas in Ghana, Nigeria and Kenya "knowledge of some method of preventing conception is already widespread". In Ghana, Caldwell observed that "the continuing attempt to prevent pregnancy is, in fact, on a considerable scale. A third of the respondents claimed to have attempted the prevention of pregnancy and a quarter that they were currently using contraceptive materials, or materials believed to be suited to that purpose, purchased from doctors or chemists. Contraception was more likely to be employed by the second-generation urbanites, by the second-generation members of the modern middle and upper classes, by those in monogamous, first marriages and by Protestants and more particularly those with Protestant wives. These attempts to prevent or postpone pregnancy were made almost entirely to prevent families from becoming over-large or to space out pregnancies". In Tropical Africa, although the large family serves as a source of parental prestige and security in old age, it is at the same time being regarded as expensive and may not be an advantage at all.

On the other hand, the majority of Caldwell's rural respondents in Ghana did favour large families. About 52%, 43%, 53%, and 43% of the married women in Lagos, Ife, Oyo and the suburb of Ibadan showed their desire for large families. Nevertheless, a fairly high proportion of the women in these areas, including the Ghanaian male and female urbanites, regarded a large family as an economic burden. These findings reflect the attitude exhibited by Kenyan respondents.

Heisel observed that "there is a strongly marked tendency to see children in an economic rather than a psychological or social context". It is therefore not surprising that there is "readiness to prevent pregnancy" among the Ghanaian urban elites. The KAP findings showed that continence, natural methods and traditional native methods for preventing conception are more commonly known to the Tropical Africans and that "imported technology and supplies" are also becoming popular although not all of them are effective. Nevertheless, oral pills and IUCD are also becoming more widely known, especially in Kenya, Ghana and Nigeria. The results of these studies show however that very little knowledge of contraception methods existed in rural Tropical Africa. Thus, educational campaigns should be stepped up to combat ignorance and apathy if family planning is to be used in helping to solve some of the Tropical African manifold problems. Heisel observed that "transition to a small family system is impeded by lack of information or by misinformation about the means to achieve control over fertility by those who might wish to do so".

Although foundations for family planning have been laid in some parts of Tropical Africa, especially in English-speaking countries there are millions of Tropical Africans who are still ignorant of, or apathetic to, the related problems of demographic and economic development. The ethical and rational way checking rapid population growth is not by deliberately increasing mortality (which should have been the easiest way of solving the problem) but by limiting the size of the family. Governments, private organisations, and international bodies would therefore be doing a great deal to help mankind if they concentrated their efforts on educating the Tropical Africans thereby making them aware of the problems plaguing the continent. In some areas colonialism will first have to be uprooted, political stability assured, and the traditional barriers of hardened attitudes towards large families penetrated before demograp and socio-economic problems could be tackled. In other areas progress will be faster and a great deal have been achieved by the end of the century.

The acute problem of economic development in under-developed countries has become more complicated than ever and the objective is no longer restricted to the increase of production. It has now become the problem of speeding up the process of social change in directions that yield falling birth rates, which in turn allow more rapid increase in per capita income. Organised birth control and family planning programmes will be needed to make people realise that the natural way of achieving rapid increases in levels of satisfaction is to limit family size. In this exercise international peace, good-will, mutual cooperation in all fields of human endeavour and favourable terms of trade for Tropical African countries will be of paramount importance during the coming decades.

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IV

POPULATION POLICIES IN INDIA

Dr. Savitri Thapar (India)

India is mainly an agricultural country with over half a million villages in which live four-fifths of the total population of 530 millions (1969). Peasant societies throughout the world, both in the past and at present, are organized in such a way as to bring strong pressures on their members to reproduce.

Traditionally "the economic organization of relatively self-sufficient agrarian communities turns almost wholly about the family, and the perpetuation of the family is the main guarantee of support and elemental security. When death rates are high the individual's life is relatively insecure and unimportant. The individual's status in life tends to be that to which he is born. There is, therefore, rather little striving for advancement. Education is brief, the children begin their economic contributions early in life. In such societies, moreover, there is cant opportunity for women to achieve either economic support or personal prestige outside the roles of wife and mother, and women's economic functions are organized in ways that are compatible with continuous childbearing."

This was the situation in the Indian villages also, until the end of the last century. With the development of rail and road transport in the country the economic self-sufficiency of the villages broke down. The flow of modern ideas and new aspirations from the cities to the villages began. In spite of this agriculture continued to remain the way of life of the majority of the people. The birth rate continued to remain high, in parallel with the high death rate. However, as famines and epidemics occurred on a wide scale in India before 1920, the growth of the population was slow and sporadic - the decades of marked increase regularly alternated with decades of slight increase. In the great influenza epidemic of 1918, about 15 to 18 million people died. Since 1920, the population has been increasing continuously. Today the total population is estimated at 550 million and increasing by 14 - 15 million every year.

This has come about through the decline in death rates. Death rates in India were very high until recently. Cholera, plague and smallpox have assumed epidemic proportions with fair regularity, and active tuberculosis was widely prevalent. Up to 1946, at least 100 million persons were estimated to suffer from malaria annually, and about one to two million people used to die annually of this disease. But since 1955 mortality rates have been falling substantially due to the use of low cost medical and public health techniques, information and research. In 1911 - 20 the death rate was estimated as high as 47 per thousand, whereas today it is estimated to be about 17 per thousand.

Since the mortality level was very high, it could be reduced quickly, at least in the initial stages, by the use of modern medicine and the application of public health measures, without substantial modification in the social structure in the country. On the other hand, human fertility can only be changed by changing the opportunities, hopes, fears, beliefs, customs and social organizations of the masses. In the absence of any significant social

change in the country, the birth rate has not shown any significant sign of decline, and remains at a high level of about 40 per thousand population.

This continuously high birth rate has produced a young age structure of population. In India, roughly two persons in every five are under 15 years of age, while in Western Europe about one in five is under 15. In India about one in twenty persons is 60 years or over, while in the West about three in twenty are 60 years or over. This age distribution has many disadvantages. One is that the number of dependants per adult is relatively large. The 1951 Census of India showed that each self-supporting gainfully employed person must support himself and two and one-half other persons, compared with one and one-half persons in the United States and one plus in Great Britain. If the dependency ratio is high, and the income is not large, then a very large proportion of income is spent on maintaining the family and savings are not large for investment for economic development. Moreover, when the birth rate is high, large sums of money are needed for providing maternity and childhealth services, and for opening new schools for the children.

The second disadvantage of the comparatively young age structure is that it is conducive to large additions of population in the future. In 1951 in India we had 79 million women aged 15 - 44, and had about 15 million births every year; in 1961, the number of women aged 15 - 44 had gone up to 93 million, and we had about 20 million births per year, and in 1969, the number of women aged 15 - 44 years is estimated to be 114 million, and the number of births has further increased. If family limitation is not adopted immediately, the number of births will go on increasing.

Another disadvantage of this age structure is that the rate of growth in the labour force is high. According to the Planning Commission of India, the Third Five Year Plan 1961-66, started with a backlog of about seven million unemployed. New entrants to the labour force during 1961-66 were estimated to be 17 million. But during this period an additional employment of only 14.5 million could be created. Hence in 1966, there was a backlog of 9.5 million unemployed, of whom about three-fourths were in the rural areas. Moreover, there will be an addition of 23 million to the labour force during the period 1966-71, indicating that during this period there will be 32.5 million people needing jobs. But in spite of vast amounts of investment for economic development, the employment potential is estimated to be of an order which is much lower than this.

As a result of the high rate of population growth leading to increase in demand for food, cultivation had to be extended to more and more marginal areas since most of the land which can be readily cultivated is already in use. It has been estimated that future increases in food production will have to come mainly from improved yields of crops and livestock, requiring heavy investments in agriculture and the use of recent developments in the technology of food production. In 1957, India had to import two million tons of wheat from the U.S.A. In 1965 the figure had risen to six million tons and in 1966 to 15 million tons. In the last few years, in India, food production has increased as a result of high yield varieties of wheat and rice, and because of this so-called "green revolution", the need for imports has diminished.

Nevertheless, the Director General of the Food and Agricultural Organization, speaking at the opening session of the World Population Conference in 1965 said that the outbreak of serious famines in some of the most heavily populated areas of the world could not be excluded as a possibility within the next five to ten years, and asked whether mankind could turn its face away from the concept of family planning when the alternative could be starvation and death.

It is also possible that the death rates might go up as a result of an inadequate increase in food production - as well as inadequate expansion of medical personnel to help curb population growth.

Birth control will not solve the problem of over-population and hunger, but it could help to give the world more breathing space, and to enable it to carry out plans of economic development. Widespread birth control seems to be the best short- and middle-term method of at least ensuring a continuation of a subsistence diet for the present population of India and other countries in similar situations.

The existing economic and social conditions in India indicate that in popularizing family planning we cannot have any direct carry over of ideas or principles from the Western countries, as the circumstances under which the reduction in family size took place in the West are not likely to be obtained soon in India. So it will have to be a novel experiment of bringing about a change in the social outlook and traditional beliefs of the people, that may make a small family desirable, in advance of more urbanization, an appreciable rise in income, or a reasonable advance in the standard of education takes place in the country. The task in India is very big, as social change leading to an appreciable reduction in family size in the West and in Japan, came as a by-product of urban industrial development (though with a varying time lag). Up to now the urbanization and industrialization which have taken place in India have not resulted in a fertility rate any significantly lower than in the rural areas. The small family pattern and the practice of family limitation have been adopted only by relatively few highly educated people with high socio-economic status, with the inevitable result that no differential fertility is noticed between the various socio-economic groups or among the urban and rural areas in the country.

First Attempts at Public Family Planning

Public advocacy for the adoption of family planning has a very recent history in India starting from the twenties of this century. From then onwards it was advocated by some social reformers and social organizations as a means of improving the health and increasing the happiness of the family. But the practice was not adopted by any significant proportion of the population.

Gradually a few public and private organizations showed more interest. In the state of Mysore, the Government, was the first in the world to establish birth control clinics at the state hospitals in 1930. Madras followed, and in 1932 the Senate of Madras University accepted a proposal to give instruction on contraception to medical students and in the following years the Government of Madras agreed to open birth control clinics in the Presidency. In 1939, 'Birth Control World Wide' opened birth control clinics in Uttar Pradesh and Matru Sewa Sangh, in Ujjain and Madhya Pradesh. In 1940 P.N. Sapru successfully

moved a resolution in the Council of States for the establishment of birth control clinics.

These activities were interrupted by the Second World War. No data on their achievements are available. It seems that only a few middle class educated urban dwellers who were motivated towards family planning made use of the facilities provided; the general population remained untouched.

The Bhore Committee (the Health Survey and Development Committee) was appointed in 1943 by the Central Government. It considered the population problem as related to the factors which have a bearing on the health of the community. This was the first committee at government level which recommended official support of birth control on health grounds, but they were divided on economic grounds, about providing such facilities alone to the poor.

The Bengal Famine Enquiry Commission reporting in 1946 also stressed the need for spreading birth control and recommended that the government should actively help in this. The Commission asked for the views of the provincial governments on this point, and the replies received showed that most of them did not favour governments taking an active part in the propagation and spread of birth control; even in states like Madras where the suggestions of the Bhore Committee on family planning were supported, the number of people who were given advice must have been very limited. The Health Survey and Development Committee in 1946 gave the proportion of medical personnel to population as one doctor to 6,300 people (75% of the doctors are in urban areas and their distribution in rural areas is very sparse) and one health visitor to 400,000 people.

The overall picture in 1952 regarding the extent and nature of the provision of family planning facilities in the whole country is described by two members of the Family Planning Research and Programmes Committee, who visited a number of clinics in some states and secured information about the working of these and all the other clinics. They stated that there were 165 family planning centres in the country maintained by governments, local bodies and voluntary organizations with an average attendance of 250 people seeking advice in any of these centres in a year. The clinics existed mostly in urban areas. People sought advice mainly for economic reasons. They also stated that private clinics were often run by unqualified individuals and generally for profit. All were poor in essential requirements - space, equipment, auxiliary staff, etc. Hospital clinics lacked sufficient staff. Follow-up was almost non-existent. The same was true of the centres associated with maternity and child welfare clinics. Most of the clinics visited lacked sufficient funds to maintain even their routine activities. Many centres distributed the diaphragms and jelly at cost price, and only a certain number of centres issued them at concessional rates to lower income families.

Family Planning in the Five Year Plan

In 1950, the Planning Commission was formed to prepare a national plan having regard to the fundamental rights guaranteed by the Constitution and the declared objective of the Government to promote a rapid rise in the standard of living of the people by efficient exploitation of the resources of the country, increasing production, and offering opportunities to all for employment in the service of the community. These objectives could be achieved

only if consideration was given to the population problem, and hence family planning has been included in all the plans for development. A very modest start was made in 1951, but after 1965 there has been a rapid expansion.

Expenditure on Indian Family Planning Programme, 1951 - 1968/69

Period	Expenditure (Millions of rupees)
1951-56	1.4[a]
1956-57	0.9
1957-58	2.6
1958-59	3.2
1959-60	5.1
1960-61	9.8
1961-62	13.9
1962-63	27.7
1963-64	22.7
1964-65	65.2
1965-66	120.0
1966-67	133.8
1967-68	255.3
1968-69	370.0

(a) five year total

Note: the figures for 1965-66; 1966-67; and 1967-68 are preliminary estimates of actual expenditure, and that for 1968-69 is budgeted expenditure.

It is the stated policy of the Government of India to reduce the birth rate from 41 per thousand to about 25 per thousand as rapidly as possible.

Funds have been allocated for Family Planning Programmes in every national plan of economic development since 1951. Although India was the first country to introduce a Government sponsored programme of Family Planning, the efforts remained limited for a long time. The Family Planning Programme in the First Five-Year Plan, 1951-56, was a very modest, cautious and carefully drafted document recommending a good deal of research into reproductive patterns, motivation, suitability, and acceptability of the various methods of family limitation, before any really effective measures could be applied. There seem to have been two reasons for this approach. Firstly, as birth control propaganda by an official body was unprecedented, the reaction of the population could not be forecast. Secondly, there were divergencies of view between members of the Sub-Committee on the 'Growth of Population and Family Planning', which was appointed to assist the Panel on Health Programmes set up by the Planning Commission.

The rhythm-method experiment was carried out during the First Five-Year Plan, but proved a failure. Very little information about the effectiveness of this method in other countries of the world was available to the Government at that time. The factors which facilitate the successful practice of the method have become clearer since. The Study of the Growth of American Families

which covered a nation-wide sample of the U.S. white population in 1955, has shown that the rhythm method was more attractive to persons of relatively higher education and status, so that it is not surprising that the experiment failed among the illiterate rural, and moderately educated lower middle class urban couples in India.

Progress during the First Five-Year Plan was extremely slow. As against £ 487,500 sanctioned for family planning, only about £ 120,000 were spent by the Central Government. 147 clinics (21 rural and 126 urban) were opened. During the same period 725 primary health units were opened but the shortage of trained staff led to a position, in which only a few included family planning clinics. Only 67 persons were trained by ad hoc courses.

At the start of the Second Five-Year Plan in 1956 the Planning Commission felt that the family planning programme needed further development on systematic lines, and asked for a continuous study of population problems and for the appointment of a suitable, more or less autonomous, Central Board to be responsible for family planning and population problems. The Central Family Planning Board was set up in September 1956. For the expeditious implementation of the programme a full-time officer on special duty (designate later as Director, Family Planning) was appointed in the Directorate-General of Health Services from March 1956. In the States also the Family Boards were established and Family Planning Officers were appointed.

The Second Five-Year Plan began on April 1, 1956 provided for a programme of action and research allocating £ 3,727,500. In view of the vastness of the problem, the allocation was small, but even so a large part of this allotment was not spent.

At every stage of the Second Five-Year Plan the rural areas were far from achieving the targets of new clinics. In the urban areas progress was better, but, as over three quarters of India's population lives in rural areas, the distribution of centres between town and country was very unbalanced. The shortage of trained personnel may have prevented the opening of new clinics in rural areas.

Family planning attitude surveys on samples of varying size have been carried out in various parts of India by the U.N., Central and State Governments, research institutions, family planning action-research programme organizers, universities and individual scholars. The results show considerabl uniformity in the size of family desired - three children amongst couples in urban areas and four among couples in rural areas - and concerning the preferr interval between births - three to four years was the most popular for couples in both areas. In the rural areas, roughly 10 to 20 per cent of married women in the reproductive age group claimed to know about contraception but their knowledge was vague and nor more than one or two per cent actually practised contraception.

In all the surveys a large proportion of the couples approved of family planning; wives were more keen than husbands and women over 35 with four or more living children expressed particular willingness to learn a method of family limitation. In urban areas about 70 per cent of couples know about the existence of family planning but only around five per cent put their knowledge into practice. In some metropolitan towns, however, the use of

contraceptives is increasing, though its effect on fertility has not yet been studied.

In all the surveys a large proportion of the couples were willing to learn about family planning, but the results in rural areas show that only a few of those who agreed to use a method of contraception did, in fact, do so. In the absence of effective contraception, their achieved family size is found to be larger than their preferred family size. The mean family size is 6 to 7 live births.

From these studies, it appears that the motivation for family planning is weak. The general impression is that couples are not interested in family planning unless their family has become sufficiently large and there are a few sons surviving.

There are many obstacles to effective family limitation. A large proportion of the villagers and even some of the urban dwellers believe that fertility is a divine dispensation and man can do little to control it. Moreover, there is in India an intense desire for sons, which also contributes to a large family size. Indian religious writings ordain that a married couple should be fertile and should produce at least one male child, who could perform religious rites connected with the death of the parents. The sons also bring security in old age for the parents, perpetuate the name and bring prestige to the family. Hence the question of arousing motivation for a small family is linked with the wider problem of bringing about a change in the outlook of the people through schemes of educational, economic and social advancement.

Thus the family planning movement has a very big task before it. It has not only to teach the methods of family planning to the couples but more important, it has to first change their social outlook through family planning education, so that the desire for a small family of two or three children may emerge. The family planning worker has to contact the couples regularly, but this is a big problem in India where there are over half a million villages and the level of literacy of the villagers is low. According to the 1961 Census only 52% of males and 24% of females in the age group 15-19 were literate. Therefore the message of family planning has to be given to them only by word of mouth.

Hence it was suggested in the Third Five-Year Plan, 1961-66, that in the villages special efforts should be made to facilitate the adoption of family planning by an extensive community approach. The goal of stabilizing population growth over a reasonable period of time could not be achieved by reyling heavily on the clinic approach. For the villages therefore a policy of training large number of workers in community development blocks was adopted to spread family planning education, and to provide family planning services through expanded maternity and child welfare facilities. The main operational body in the rural areas is a family planning unit in each community development block which covers on an average some 80,000 population. Each rural family planning unit is designed to include among others a female doctor, a block extension educator, and a family welfare worker. This unit is added to the staff of the existing primary health centres, which under the public health scheme, are established, one in each community development block, all over the country.

Under the normal Maternity and Child Health pattern every primary health centre is supported by three sub-centres. The extended family planning programme makes financial provisions for enlarging this scheme by adding more sub-centres to each primary health centre. The maternal and child health services are to be integrated with the family planning services within the block, with all field workers, attached to the primary health centres and sub-centres, responsible for providing maternity and child health services as well as family planning advice and facilities. Under this new scheme there will be eight trained Auxiliary Nurse-Midwives servicing the primary health centre and the sub-centres in each block, or about one worker per 10,000 population. In addition to these it is visualized that there will be a large corps of voluntary workers in the field. It is planned that there should be one per 1,000 population, to be drawn from among school teachers, village local government members, local leaders and village midwives, etc. They will assist the government workers in various ways including organizing village meetings and acting as distributors for contraceptives. Orientation camps on family planning are organized with the assistance of extension educators where the cooperation of villagers is enlisted for the dissemination of facts about family planning and the building up of social concern in the villages.

These were the plans. The U.N. First Advisory Mission which visited India in 1965 for evaluating the family planning programmes found that the progress made in the implementation of the extended programme varied from state to state. It reported that in all the states a state family planning officer had been appointed and in about half of the districts a family planning bureau had been established. At lower levels in rural areas the scheme was to a great extent based on existing health services and particularly primary health centres and sub-centres, but these services were far from being fully developed. About 16 per cent of all community development blocks in the country were without a primary health centre, 16 per cent of them had a primary health centre without a doctor in charge, 38 per cent had a primary health centre with a doctor but without sub-centres staffed according to the Maternity and Child Health pattern, and only the remaining 30 per cent of the blocks had a primary health centre fully staffed according to the Maternity and Child Health Scheme but not necessarily according to the extended family planning programme.

The U.N. Second Advisory Mission which visited India in early 1969, also found that though in a few states most of the authorized posts have been filled, in most of the states there is a shortage of personnel in all categories and there are blocks with virtually no trained staff. This mission also pointed out that the present level of Indian health services is inadequate, and improvements are imperative if the policy of associating family planning with Maternal and Child Health is to yield the desired results. The insufficiency of existing facilities is especially serious in the rural areas.

The key person in the field is the Auxiliary Nurse-Midwife, who is responsibl for ante-natal and post-natal care in her areas of 10,000 people. She travels on foot from village to village, and it has been agreed that she cannot adequately manage Maternal and Child Health and Family Planning in a population larger than 3,000 - 5,000 people. This means that even with one Auxiliary Nurse-Midwife for every 10,000 people - a target which is still far from reached - at least half of all rural deliveries, i.e. 8 million per year, will continue to be conducted by indigenous midwives.

The Mission in 1969 also found that at the sub-centres, the equipment and supplies of drugs, instruments, etc., are often of low standard and inadequate in comparison with the work expected of the Auxiliary Nurse-Midwife. Also the training of the indigenous midwives should be undertaken to give them an idea how to reduce the risks for the mother and her child, and also to enlist them for the family planning programme. Equipment and supplies were found to be limited in Primary Health Centres as well.

The shortage of well trained personnel to carry on education and persuasion of eligible couples and to provide family planning services to those who are so motivated was adversely affecting the implementation of the Extended Programme. When the new scheme of Extended Programme was introduced in 1963, no adequate steps were taken simultaneously to expand the training facilities. In January 1965, there were 11,400 persons who had been trained specifically for family planning work. In order to man the Extended Programme about ten times as many trained workers were needed.

Since then major efforts have been made to meet the training needs. At the central level, there are five training institutions, which are responsible for training personnel at Central, State and district levels. Forty-three regional family planning training institutes have been established by the states where training is given to programme workers employed at the block level and below. There are some 330 training centres for Auxiliary Nurse-Midwives, 21 training centres for Lady Health Visitors and 291 training centres for general midwives. Besides, there are 16 centres for training family planning field units, and some community development training centres for providing courses in family planning.

But so far, training remains a major problem area in the programme. The Second U.N. Mission reports that a very large percentage of the programme staff have not been trained at all, and of those who have been trained, a large proportion may have only attended short courses. Thus there is need for training of existing as well as new personnel.

About half of the number of personnel currently needed in the Extended Programme are in position. If allowance is made for the additional requirements during the Fourth Five-Year Plan, 1969-1974, it appears that the programme staff will have to be more than doubled by 1974.

	Required 1974	In Position 1968	Coverage (percentage)
	Thousands of Personnel		
Doctors	11.0	6.1	55
Extension Educators	10.2	3.7	36
Lady Health Visitors	11.1	3.4	31
Health Assistants	24.4	5.0[a]	20
Auxiliary Nurse Midwives	58.5	21.3	37

a) Estimates for eleven states only

There is moreover an uneven distribution of trained personnel in relation to the needs in the states. The interstate movement of these workers is very limited. There is also a distributional problem with regard to rural versus urban areas. Most workers are trained in urban areas for urban conditions of work and it is difficult to recruit enough workers for rural areas. The programmes also finds it difficult to recruit the required number of lady doctors. Efforts are being made to attract more workers for the programme.

The Government of India has created a big organization for the family planning programme since 1965. At the Centre, a Cabinet Committee, headed by the Prime Minister, has been created to give direction to the programme, to approve policy and to review progress. In most states, there are similar cabinet committees, each of them headed by the Chief Minister of the State. The efforts of the Union, States and voluntary bodies are coordinated by a Central Family Planning Council. The Department of Family Planning was constituted as part of the Ministry of Health at the Centre in April, 1966. In each state, a State Family Planning Bureau coordinates and supervises the implementation of the programme at lower levels; in most districts family planning units have been set up to perform the same function in their areas, while at block and village levels family planning forms an integral part of maternal and child health services, whose staff has been increased for this purpose. Regional offices have also been established.

The Second U.N. Advisory Mission on Family Planning which visited India in early 1969 appreciating the notable achievements made in the organization and administration of the family planning programme recommended some improvements. They suggested that long-range administrative planning and institutional development were needed in order to adapt the programme to changing conditions. This is not a short-term "crash" programme, but one designed as much for family welfare planning as for population control. So the Mission emphasized the importance of administrative planning to provide guide-lines on how the programme should evolve, which functions might be increasingly performed by other than Government departments and which elements in the programme are likely to be permanent in character and can therefore be removed from temporary status.

Contraceptive Methods

The family planning programme makes available a variety of contraceptive methods so that the couples can pick and choose the one best suited to their requirements. For the time being the programme advocates conventional contraceptives for newly married couples, IUD or conventionals for those with one or two children, and sterilization for couples with two or more children. The conventional contraceptives such as foam tablets, diaphragms and jellies have low acceptability in India; though the condoms are enjoying increasing popularity, and some improvements in their supply and distribution have recently been made. The distribution of condoms has increased from 5.8 million pieces in 1957/58 to 50.6 million pieces in 1968/69. However, hardly anything is known concerning the regularity of use and the use-effectiveness of condoms, and studies of these aspects are much needed.

The majority of couples in India do not want to adopt any method of family limitation before they have completed their desired family size; then they prefer sterilization, as this permanent method gives them relief from further

unwanted pregnancies. As a result sterilization has become an increasingly popular method of family limitation. In some states compensatory allowances are given for sterilization, in other states the operation is carried out free of charge. New experiments with varying incentives are being tried out in a few states. The private medical practitioners who perform the operation get a fee. (The terms are "vasectomy" for sterilization of males and "tubectomy" for sterilization of females.) Tubectomies accounted for two-thirds of the total sterilizations in 1956, and up to 1960 they continued to exceed the number of vasectomies. Since, that time, however, the number of vasectomies has increased more rapidly than that of tubectomies and in 1965, they accounted for more than 80 per cent of all sterilizations. Since the inception of the official sterilization programme in 1956, approximately 5.9 million sterilizations have been performed, and at the end of 1968, the all-India figure reported was 10.1 sterilizations per 1000 population, though the progress varied from state to state.

On the basis of available studies, the median age of sterilization acceptors is 36-39 years for men and 31-32 years for women. The majority of acceptors earn Rs. 100 or less per month and are illiterate or have had less than complete primary school education.

Very little is known about the psychosomatic and possible long-term psychosexual effects of sterilization. But the U.N. Mission in 1969 was informed that in India there were very few complaints of this nature on record. Further psychological studies of the effects of sterilization need to be done.

Following pilot studies, clearance by the Indian Council of Medical Research, and strong endorsement by the first U.N. Family Planning Mission in 1965, the IUD was introduced in the programme. In 1965-66, more than 810 thousand IUD insertions took place, in 1966-67, 900 thousand, in 1967-68, 700 thousand and in 1968-69 only 480 thousand insertions took place. The rapid decline in IUD acceptance, was due to insufficient information being given to the public regarding the common side effects. The medical personnel had not been adequately trained to deal with the complications through careful follow-up of cases, and many lost confidence in the method, particularly those who were working in areas where IUD camps had been organized but follow-up was left to inexperienced field-staff. To revive the programme it has been suggested that these defects should be corrected.

One of the problems in expanding the IUD programme is the shortage of lady doctors. Women in India do not like the insertion to be done by a male doctor. Hence, the increased utilization of paramedical personnel for IUD insertions needs careful consideration. The U.N. Mission in 1969 observed that in the States of Haryana and Punjab, where the IUD programme had been more successful than elsewhere, insertions were being performed by trained health visitors and trained Auxiliary Nurse-Midwives. In some other countries also paramedical personnel are being utilized.

According to the Indian Penal Code, induced abortion is illegal except when performed for the purpose of saving the life of the mother. In 1964, the Government of India appointed a committee to study the question of abortion and the possibility of liberalizing existing legislation. The committee made a number of recommendations for a relaxation of the current code on abortion. These are included in a new Bill regarding medical termination of pregnancy.

The Second U.N. Mission strongly supported a liberalized approach to abortion in India.

Trials with oral contraception are now under way in India. Three hundred centres scattered throughout the country have been selected for these trials, and two million pills have been supplied by USAID. Some 10,000 women are included in the trials.

Communications and Motivation

The Programme has been successful so far in reaching the highly motivated couples, especially sterilization operations for men who have completed their desired family size and women over 35 with four or more living children who are particularly willing to learn a method of family limitation. It means that couples adopt family limitation at too late a stage to have any significan effect on birth rate. In one study, it has been estimated that if all men with four or more children were to undergo vasectomy, the birth rate would fall only by 18 per cent. In Maharashtra State, in a district where the largest number of vasectomies took place in 1960, the rate came to be 1.2 vasectomies per thousand population. The figure does not seem very impressive, when it is realized that for each thousand of population there were on an average about 74 men with four or more living children. Hence, it did not bring about any significant reduction in birth rate.

For family planning to be successful in reducing the birth rate, the couples have to start early in their married life. Hence, a carefully planned programme is needed which may motivate the young married couples to see advantages of a small family of two or three children, so that they accept the small family norm as a way of life.

Through reliance on medical personnel and door-to-door visits by para-medical staff and extension educators, the programme has reached the highly motivated couples. However, it has not yet reached the younger couples who are less motivated and who are generally unable to act on the basis of information or knowledge alone. Unlike the highly motivated, they find it difficult to adopt the practice of family planning and need guidance and coaxin at every stage in the process. Hence, in relation to this second group the family planning programme has to find ways of changing their attitudes as well as offering information on techniques.

It is possible that enthusiasm in the form of crash programmes to reach short-term targets might have led sometimes to counter-propaganda and rumour-mongering. There is a need to build in the programme a machinery to deal effectively with such adverse propaganda.

Mass media have been used widely in India to create awareness for family planning. The All-India Radio regularly broadcasts family planning programmes especially in its rural services. Some films on family planning have been prepared. Efforts have also been made to utilize such forms of communication as song, drama and wall paintings, etc.

There are however many limitations in the mass media in a country like India. Limitations arise from the large size and wide dispersion of the potential audience, the diversity of languages, the widespread illiteracy, the limitations in radio reception, the scarcity of cinemas in rural areas and the virtual absence of television. Nevertheless, the present mass communication activities have created much awareness of family planning, though the acceptance of the idea and the actual practice of family planning fall far behind. The Second U.N. Mission has suggested that under Indian conditions, it is vitally important to complement the mass media with communications at the interpersonal level, both orally and through more individualized audio-visual material. It is also necessary to employ available mass media in a selective manner, in order to reach these groups which are strategic to programme success. For interpersonal communications, the extension educator, can play a very important role, and though at present he is well trained in health aspects, the communication-motivation aspect of his training programme needs to be strengthened.

In 1967, the Government of India constituted a Small Family Norm Committee, to consider proposals regarding incentives and disincentives which might assist in making people accept the small family norm and practise family planning. This committee has reported that in view of the slow process of mass communication, some incentives and disincentives are essential to accelerate the acceptance and practice of family planning. In this connection the U.N. Mission points out that the long-range effects of disincentive schemes upon popular acceptability of family planning are insufficiently known and they should be studied as a guide to future action.

External Assistance

At the time when India was developing its family planning services, the nature of the country's population was insufficiently understood, inside and outside the country. Most of the Governments of the industrialized countries were indifferent towards any schemes of family planning, and hence it was not considered a priority area of external assistance by them. In the past few years there has been a growing realization of the urgent need to find ways and means of moderating population growth. And an increasing number of industrialized countries have recognized this field as a top priority area for their technical and financial assistance programmes. Hence, the family planning programme of India now receives assistance from many external sources, multilateral and bilateral, governmental and non-governmental.

The Second U.N. Mission feels that the United Nations family of organizations can render important assistance in several areas of programme operation where there remain major needs for completing the programme infrastructure. Such assistance should supplement the contributions from other sources.

The family planning programme of India merits increased support from external sources in view of the deficiencies of matériel, communication, research and training noted above. There is however need for an effective coordination of the work of the various external agencies giving aid.

Demographic Impact

Though the Fourth Five-Year Plan period 1969-1974, allocates a considerably expanded sum of Rs. 3,000 million for family planning, the problem is so vast, that even this would cover only one-third of the country's 100 million married couples who will be in the reproductive age group by 1974. A large number of clinics have already been opened in the country. In 1968, 5080 rural family welfare planning centres, 19,111 sub-centres and 1,775 urban family welfare planning centres were functioning.

The family planning efforts made so far cannot be accurately assessed in terms of their impact upon population growth. The vital registration system in the country does not function adequately. As there are substantial under-registrations of births and deaths, we are unable to make any accurate estimate of their effect on population growth. An effort will be made to evaluate the family planning programme, by including in the 1971 Census a question on current fertility to be asked of all married women in a sample of census enumeration blocks. While it is true that the extensive efforts made so far cannot be accurately assessed, there is no doubt about the achievements in terms of family planning practised in the country. It is evident from the large number of sterilizations and IUD insertions, the scale of condom distribution, and the consolidation and expansion of family planning facilities and services.

The task in India is extremely big. The family planning programmes laid down in the Fourth Five-Year Plan should be vigorously pursued. The programme must involve energetic measures to raise the age at marriage and to promote other social changes which may reduce fertility, along with the strengthening of the family planning activities.

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